EGYPT OIL&GAS NEWSPAPER

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Oilfield Service Companies Adopt a New Role

DRIVING REVENUES THROUGH INNOVATIVE TECHNOLOGY

SEISMIC DATA FIRMS CONTRIBUTE TO UPSTREAM

IMPROVING SERVICE COMPANIES' PROFITABILITY THROUGH SUPPLY CHAIN AGILITY

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14 - 16 February 2017

EDITOR'S NOTE

Service companies have repeatedly proven that they are a key to a successful business strategy in the oil and gas industry. Firms providing a plethora of services related to exploration and production of oil and gas play a much crucial role than generally believed. Yet, in discussions among industry leaders, issues related to services seem to be sidelined over so called larger topics, despite that service firms contribute immeasurably to the oil industrial advancements.

As drilling costs per well exponentially increase, it is service companies that come to rescue. For instance, in their quest to learn what lies below the surface, oil and gas companies have no other choice but to contract geoscience services that help them decide how to bring out and better manage present reserves.

Therefore, in this issue, EOG team studied recent developments in the oil and gas services sector. As authors of the articles convincingly argue, the position of oilfield services firms has transformed in recent years in that these entities have now become more of oilfield co-operators rather than mere contractors. Hence, service companies are left to live up to the market expectations, which necessarily feed into their choice of business strategy.

Oilfield services companies have been developing mechanisms to sustain their position in the currently unprofitable global environment. One of the effective measures may be to expand and integrate services portfolio, invest in technological innovations, and strike new alliances with national or private oil and gas producers.

As profits and revenues of service companies highly depend on the scale of exploration activities, innovative technology has become another essential component of their strategies for revenue generation. Nonetheless, future challenges are still there to be addressed, for which integrated and innovative technologies, in particular towards safe and environmental operations, can be the right choice to make.

At the same time, flexibility and ability to adapt internal structures to new inputs from the global oil market are crucial. One answer to this conundrum may rest in the so called Supply Chain Management, another one in continuous investments in research and development.

These are some of the topics we cover in the issue that has just landed on your office desk. We believe that you will enjoy reading it.

Finally, I would like to express my gratitude to the entire editorial team at EOG for their tremendously hard work on this issue in the course of the past month, and their dedication. This issue would not be possible without your professional help.

And as always, we all thank you for your trust and readership.

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inside this issue

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Eni's Zohr to Start Production by End 2016

First natural gas production from Zohr field in the Mediterranean Sea is expected to start in December 2016, an official with the Egyptian General Petroleum Corporation (EGPC) stated to Egypt Oil&Gas.

Meanwhile, Italian company Eni confirmed that Zohr field's original gas in place is 30tcf based on the results after completing the drilling of the fifth well offshore Egypt, reported Exploration & Development News.

Eni tested the fifth well by opening a 90m reservoir section to production. The well generated an output of more than 50mcf/d. According to the preliminary results, Eni estimates the well is to deliver up to 250mscf /d of gas in the production configuration.

The fifth well of Zohr is 12km southwest from the field's first well, and is at 1,538m water depth in the Mediterranean Sea. It reached 4,350m and has a carbonatic reservoir and gas accumulation in the south western part of the Zohr megastructure. It contains about 180m of continuous hydrocarbon column in the carbonate sequence, informed Offshore Engineering.

Furthermore, the ministry of petroleum reached an agreement with Eni to start drilling the sixth and last gas well in the Zohr field in the Mediterranean Sea in January 2017.

In addition, Eni also upgraded the potential production of Baltim South West field in Egypt, which is expected to reach to 1tcf of gas, after the results of the Baltim South West 2X appraisal well that was drilled after the successful drilling of the discovery well Baltim South West 1X, according to OE Digital. The Italian firm owns 50% of assets in the field, along with BP.

Eni stated that the new output projections have boosted the gas potential of the Great Nooros area to an estimated 3tcf of gas, 2tcf of which in the Nooros field, Al Ahram News wrote.

The official with the Egyptian General Petroleum Corporation told Egypt Oil&Gas that the discovery of Zohr field motivated foreign investors to develop existing concessions, as well as drill new oil and gas wells. The discovery has shined a spot light on Egypt's oil and gas industry and attracted new international investors to the sector.

Egypt Secured $6b IMF Funding

A source from the Central Bank of Egypt (CBE) stated that the country has managed to primarily secure the additional funding required to proceed with the International Monetary Fund (IMF) loan. Efforts exerted by both the CBE and the Egyptian government resulted in securing the requested financing package of $6b, reported Al Mal News.

This confirmation comes as IMF Managing Director, Christine Lagarde, said that she would run discussions with heads of states to encourage them to contribute a mutual $5-6b funding to Egypt. Her comments were made on the sidelines of the G20 Summit held in China during early September.

Egypt Oil&Gas reported in mid August that the IMF's $12b loan to Egypt will be divided into three tranches, each worth $4b and paid out in two installments worth $2.5b and $1.5b. The first installment was expected to be received in September.

In related news, the African Development Bank agreed to lend Egypt $1.5b in December, with the government having already received $500m. Furthermore, the United Arab of Emirates (UAE) has deposited $1b to the CBE in August.

Ganope Issued Ten New E&P Tenders

Ganoub El Wadi Petroleum Holding Company's (Ganope) launched a new tender for exploration in ten areas located in the south of Suez Gulf and in the Western Desert, as the country seeks to boost investment in the key energy sector, Zawya informed. The bidding process will be ongoing for a couple of months and it will be concluded by the end of November 2016, informed Ganope's CEO, Sherif Soussa, according to Ahram Gate.

Meanwhile, Ganope's CEO stated that the company assigned five new oil and gas concessions to American, Canadian, Malaysian, British, and Egyptian firms, with investments exceeding at least $100m.

Sousa added that Ganope's efforts in exploration resulted in a positive outtake, with the company currently running an assessment for RAK-X1 well in Ghazalat Concession in the Western Desert owned by Emirate RAK. The well has confirmed reserves of about 2.2 million barrels. Soussa further noted that the total production of companies supervised by Ganope is about 27,000 b/d of crude.

Furthermore, the company drilled GC9-A well in the area of Petrogulf with a capacity of 1,182b/d of crude oil.

Egypt, Shell Agreed on Gas Re-pricing for Burulus Field

The Egyptian Ministry of Petroleum and Mineral Resources agreed with Royal Dutch Shell Petroleum Company to re-price gas produced in phase 9C from Burulus field to be the same pricing as 9B phase gas, ranging between $2.5 and $5.88 per thermal unit, reported Al Borsa News. Shell's total production from Burulus and Rasheed fields has declined to 700mcf/d of gas, in comparison to 850mcf/d in 2015. In addition, Shell discovered a new gas field in Alam El Shawish, containing about 0.5tcf of gas. Furthermore, the ministry agreed to allow the company to export around 125mcf/d of gas through Edco liquefaction factory that is owned by Shell.

Al-Jahra SE-1X Oil Well Starts Production

Kuwait Energy PLC announced that production from Al-Jahra SE-1X oil well located in Abu Sennan concession in Egypt's Western Desert has started, reported Kuwait News Agency (KUNA). The company's CEO, Sara Akbar, said that the well is producing at a 2" choke size and output has steadied at a per day average rate of 410b/d of oil. A development lease was granted to Kuwait Energy from the Egyptian Petroleum Corporation (EGPC), with about 460b/d. Kuwait Energy owns 50% of revenue interest and is the operator of the Abu Sennan concession lease. Dover Investments holds 28% and Rockhopper Exploration holds 22%.

Eni, BP Drilled 2nd Well in South Baltim

Italian Eni and UK's British Petroleum finished the drilling process for the second well in South Baltim field east of the Nile Delta. The new well is expected to produce 350mcf/d of gas, reported Daily News Egypt. The production of the second well is being tested to ensure the available quantity of natural gas as the reserves are estimated according to the preliminary results of the first well and the exact quantities will be verified by the results of the second well's examination. Furthermore, the two firms are improving South Baltim field by drilling six developing wells, ranging from 3,900-4,000m below sea level.

Egypt's Daily Decline in Gas Fields Down 55%

The daily decline in the maturity of Egyptian gas fields decreased from 100mcf/d to 45mcf/d, Al Borsa News informed. However, fields recently connected to the national gas grid are new discoveries with high production rates and are further offsetting production declines. A source from the Egyptian Natural Gas Holding Co (EGAS) stated that Egyptian production of natural gas reached 4.17bcf/d from 4.05bcf/d. The source further cited a 140mcf/d of gas production boost to Italian Eni's Nooros field and British Petroleum's Taurt field. In order to meet local demand of gas, Egypt augments domestic production with 1.2bcf/d of gas imports via Floating Storage Regasification Units (FSRU) stationed at Sokhna Port and 100mcf/d from Jordan's pipeline.

Egypt to Meet FiT Projects' Investors

The Egyptian Ministry of Electricity will hold a meeting with international financial institutions to discuss possible ways of funding renewable energy projects in phase II of the Feed-in Tariff (FiT) program, reported Al Borsa News. The International Finance Corporation (IFC), European Bank for Reconstruction and Development (EBRD), and the European Investment Bank will attend the meeting. New and Renewable Energy Authority's (NREA) Chairman, Mohamed Salah Al Sobky, stated that the meeting is held to answer their enquiries about phase II and to reach loan agreements to finance companies' in the new and renewable energy sector.

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Egypt's Foreign Oil Investments Increase

The Egyptian Minister of Petroleum and Mineral Resources, Tarek Al Molla, stated that total foreign investments in the oil and gas sector in Egypt for the year reached $6.6b, a 12% decline when compared to 2014/2015 foreign investments that amounted to $7.5b, reported Reuters. He added that foreign investments in the oil and gas sector during the fiscal year 2015/2016 were strong despite low global oil prices.

In line with this industry trend, Norway's Rystad Energy Consulting firm expected global oil and gas investments to retract to $522b in 2016, after decreasing by 22% to reach $595b during 2015.

Similarly, Canadian Sea Dragon Energy's (SDX) General Manager in Egypt, Ahmed Farid Moaaz, said that the company will increase its investment budget in South Disouq concession to reach $17m instead of the original $9m that was specified in the signed agreement with the Egyptian Ministry of Petroleum, reported Al Mal News.

The drilling of the first well in the concession is expected to start before the end of March 2017. However, SDX is open to drill more wells depending on the results of geological surveys conducted at the area. The company contracted Canada's Geophysica Torun to perform seismic analysis for the South Disouq concession to decide if it is promising to excavate.

SDX's agreement with the ministry stated that only one well will be drilled in the first phase of the project. Moaaz added that SDX, a foreign oil exploration and development company operating in Egypt, expects to boost its current oil production that stands between 1,800 and 2,000b/d, once the new concession is added to production. The company currently holds the rights to four concessions in Egypt with South Disouq, North West Gemsa, South Ramadan, and Meseda.

The Egyptian oil minister noted that the international oil year-to-date investments in the country are projected to amount to an estimated $8.5b during the fiscal year 2016/2017. El Molla added that Egypt seeks to pave the way for the petroleum sector to find new sources of oil and gas outside Egypt in order to increase the country's hydrocarbon reserves.

Egypt Boosts Its Gas Production

Egypt boosted its natural gas production to reach 4.35bcf/d from August level of 4.17bcf/d. This increase in natural gas output, at a rate of 230mcf/d, came as a result of linking new wells to production. Furthermore, a source from the Egyptian Natural Gas Holding Co (EGAS) stated that gas imports to the country decreased from 1.3bcf/d to 1.25bcf/d, informed Al Borsa News.

In related news, earlier in September, EGAS reported that Egypt's natural gas production capacity was projected at 330mcf/d as a result of linking wells located in the Mediterranean, Nile Delta and Western Desert Concessions owned by Eni, BP and Shel, to production, according to Al Borsa News.

The report further explained that the company successfully added Petrobel's Nedoco North-West6, with gas production capacity 140mcf/d. In addition to bringing in Nedoco West2, with gas production capacity of 100mcf/d. This has sequentially boosting Eni's Nooros field total gas output to 670mcf/d. The Italian company has also added Pharaonic Petroleum's Taurt-8, with gas production capacity of 70mcf/d, and finally Badr el Din Petroleum (BAPETCO)'s STRA3-3 well, with gas production capacity of 20mcf/d.

The news comes as Egypt's Minister of Petroleum and Mineral Resources, Tarek El Molla declared, in late August, that Egypt is focusing on increasing the country's strategic reserves and production in the oil and gas sector.

Apache Uncovered 7 New Oil, Gas Discoveries

Egypt's Khalda Petroleum Company (Apache) uncovered seven new oil and gas discoveries in the country's Western Desert area during the fiscal year 2015/2016, in addition to drilling 50 new wells and completing work on 191 others. These accomplishments came as part of the company's initiatives to develop crude oil and condensates production plans in the country, reported Al Borsa News.

Khalda's CEO, Mohamed Abd Al Azzim, stated that production rates reached 153,000b/d of crude oil and 480mcf/d of gas, resulting in a total daily production rate 317,000b of crude oil, condensates, and natural gas. The company's reserves of petroleum reached over 52mb of crude oil and condensate, as well as 118bcf of gas.

Abd Al Azzim added that the foreign partner, US Apache, invested $796m to fund explorations and field improvements during the fiscal year 2015/2016.

The announcements came after the news that the Egyptian Prime Minister, Sherif Ismail, met with the US oil and gas producer, Apache Corporation, to discuss the company's plans to inject investments in Egypt in new explorations to cover the necessary requirements for petroleum products in the country, as Egypt Oil&Gas reported.

Egypt Received $200m in Power Aid from EU

Deputy Head of the European Union Delegation to Egypt, Reinhold Brender, stated that the European Union (EU) helped Egypt finance energy projects by granting around $200m, reported Al Borsa News. On the sidelines of the Integrated Sustainable Energy Strategy Conference, the EU officials stressed that they are supporting Egypt's energy on financial, operational, and legislative levels. The country's energy strategy was also endorsed by the national energy model TIMES-EGYPT that was designed by European consultants presenting several visions for energy future that include developing coal produced energy factories, producing nuclear energy, new gas fields discoveries, and new and renewable energy production.

El Molla Reviewed Petchem Developments

The Egyptian Minister of Petroleum, Tarek El Molla, discussed the importance of the petrochemical sector to Egypt, aiming to add value to the nation's petroleum wealth, according to a press release. El Molla added that the petroleum sector succeeded in executing seven petrochemical projects worth $7.5b with total capacities around 5mt/y of petrochemical products to cover market demands and achieve profits worth $3b annually. Furthermore, the Egyptian President, Abdal Fattah El Sisi, previously encouraged the development of the sector by launching recent ethylene and derivatives projects, worth $4b in investments.

Beach Egypt's Deal Boosted Rockhopper's Share

Shares in Rockhopper Exploration were up 3.7% mid September as the company boosted production after acquiring assets in Egypt by purchasing Beach Petroleum Pty Limited for $11.9m, Proactive Investors reported. Rockhopper's Chairman, David McManus, said: "Our production for the remainder of 2016 is estimated to be approximately 1,500b/d of oil equivalent, with operating cash flows expected to broadly cover the group's overheads going forward," Digital Look informed. The group maintained balance sheet strength with cash resources of about $75m, with revenues for the first six months of 2016 increasing by about 45% to $2.9m, compared to the same period in 2015.

Egypt Mulls Nullifying 6 Coal Plant MoUs

A source from the Egyptian Ministry of Electricity and Renewable Energy stated that the ministry may consider nullifying memorandums of understanding (MoU) for six coal-fired electricity plants, reported Al Mal News. The MoUs were signed in March 2015, during the economic forum held in Sharm El Shiek. They pertained to the production of electricity in El Hamrawein Area, with investments estimated at more than $23b, with a collective production capacity of over 19,000 MW of electricity. The companies included in the agreements were China's Dongfang Electric Corporation and Shanghai Electric Group, as well as Saudi Arabia's Orascom, Epic, Acwa Power, and Tharwa Investment Company.

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Dolphinus, TAQA to Import Gas to Egypt

Dolphinus Holdings and TAQA Arabia have requested licenses from the Egyptian Natural Gas Holding Company (EGAS) to import natural gas for private sector in Egypt, reported Al Borsa. For the time being, both companies have been given preliminary approval for their import requests in anticipation of Egypt's new gas law.

A governmental official stated that the national gas regulatory authority cannot authorize private sector companies to import natural gas and sell it in the local market until Parliament approves the new gas law that will liberate midstream and downstream areas of the Egyptian gas market. The law is expected to be finalized by the end of 2016.

EGAS, which owns gas distribution networks in Egypt, declared the conditions for importing gas to the country, with importers maintaining all necessary approvals and paying all required custom fees and tariffs related to the importation process. EGAS specified that the imported gas should have not more than 0.1% of oxygen and 3% of carbon dioxide, as per the standard for Egypt's national gas grids.

Meanwhile, the Israeli Knesset approved a deal with Dolphinus Holdings to import gas from Israel to Egypt for three years with the possibility to renew the contract for extra two years.

Egypt's First Solar Plant to Start Operations

Egypt's Karm Solar was to start operations in its first solar power plant by late September, producing 1 MW of energy, located in Sahl Hasheesh approximately 18km south of Hurghada, reported Al Borsa News. Karm Solar's CEO, Ahmed Zahran stated that the establishment cost EGP 14m, financed through the Social Fund for Development and internal investments from the company itself, reported Daily News Egypt.

As the first solar energy producing power plant in Egypt, Karm Solar's facility will save 600,000 liters of diesel each year, and reduce the country's carbon footprint by 1,620t annually.

The Egyptian Electric Utility and Consumer Protection Regulatory Agency granted Karm Solar a license to sell power directly to commercial consumers, and the company finalized the financial closure for EGP 17m, informed Al Borsa News. A plot of land was allocated to the project.

Karm Solar entered a power purchasing agreement with Canal Company for Electricity Distribution (CCED) under the government's Feed-in-Tariff program. Furthermore, the company has agreed with several banks on covering the project's funding needs.

China to Lend Egypt $4b for Renewables

The Egyptian Ministry of International Cooperation stated that Egypt is negotiating with China a $4b loan to fund the country's renewable energy strategy. Deputy Minister for Economic Affairs, Shehab Marzban, added that the investment is planned for the financing of the country's solar power projects that will generate in the excess of 1GW of electricity, reported Al Ahram. Marzaban added the loan comes as both countries collaborate to further expand their bilateral energy relations, with agreements on the development of a factory to produce photovoltaic in Egypt and the construction of various solar plants.

Beni Suef Plant to Generate 800 MW

The Egyptian Ministry of Electricity and Renewable Energy agreed with German Siemens to run two electricity production units in the Beni Suef power plant, with a capacity of 800 MW, Al Borsa News reported. The gas supply lines have been successfully linked to the grid and six concrete production units were inaugurated. The facility will start a trail production to output 500 KV, reported the Daily News Egypt. The Egyptian Electricity Holding Company agreed with Siemens in 2015 to implement three power plants with a combined cycle system of 14,400 MW.

DRILLING

QARUN

QARUN, a joint venture between EGPC and Apache, has completed drilling a new oil development well in its concession area in the Western Desert. The oil production rate of Qarun in August 2016 was 1,197,349 barrels/month.

HAMRA-32

The well was drilled at a depth of 6,400ft utilizing the EDC-64 rig. Investments surrounding the project are estimated at $1m.

KHALDA

KHALDA, a joint venture between EGPC and Apache, has completed drilling three new oil wells in its concession area in the Western Desert. The oil production rate of Khalda in August 2016 was 4,686,842 barrels/month.

AG-126

The well was drilled at a depth of 10,700ft utilizing the ST-10 rig. Investments surrounding the project are estimated at $2.739m.

MRZK-133

The well was drilled at a depth of 6,800ft utilizing the EDC-66 rig. Investments surrounding the project are estimated at $1.073m.

PHOIPS.1X(ST)

The well was drilled at a depth of 12,500ft utilizing the EDC-40 rig. Investments surrounding the project are estimated at $1.510m.

GPC

GPC, a public sector company, has completed drilling a new crude oil development well in its concession area in the Western Desert. The oil production rate of GPC in August 2016 was 1,520,340 barrels/month.

BAKR -126

The well was drilled at a depth of 4,987ft utilizing the ST-9 rig. Investments surrounding the project are estimated at $1.5m.

AGIBA

AGIBA, a joint venture company between EGPC and IEOC, has completed drilling new crude oil development wells in its concession area in the Western Desert. The oil production rate of AGIBA in August 2016 was 1,576,799 barrels/month.

MEL-NAYA–1X

The well was drilled at a depth of 11,570ft utilizing the ST-8 rig. Investments surrounding the project are estimated at $2.292m.

JASMINE-6

The well was drilled at a depth of 13,500ft utilizing the PDI-92 rig. Investments surrounding the project are estimated at $6.139m.

B.P

B.P, a British multinational research & exploration company, has completed drilling two new exploratory gas wells in its concession area in the Mediterranean Sea.

TAURUS CENTRAL-1

The well was drilled at a depth of 7,490ft utilizing the DISCOV-2 rig. Investments surrounding the project are estimated at $17.739m.

LIBRA N-2

The well was drilled at a depth of 6,223ft utilizing the DISCOV-2 rig. Investments surrounding the project are estimated at $19.5m.

BAPETCO

BAPETCO, a joint venture between EGPC and Shell, has completed drilling three new exploratory gas wells in its concession area in the Western Desert. The oil production rate of BAPETCO in August was 1,524,720 barrels/month.

SITRA 8-BP

The well was drilled at a depth of 11,712ft utilizing the EDC-72 rig. Investments surrounding the project are estimated at $2.019m

SITRA 3-B

The well was drilled at a depth of 10,666ft utilizing the EDC-51 rig. Investments surrounding the project are estimated at $3.980m.

OBA D-49

The well was drilled at a depth of 14,338ft utilizing the EDC-42 rig. Investments surrounding the project are estimated at $4.377m.

GUPCO

GUPCO, a joint venture between EGPC and BP, has completed drilling a new exploratory oil well in its concession area in the Suez Canal. The oil production rate of GUPCO in August was 2,229,052 barrels/month.

M120-153 (ST)

The well was drilled at a depth of 8,300ft utilizing the BAHARI-1 rig. Investments surrounding the project are estimated at $1.51m.

Egypt Seeks LNG Imports

The Egyptian General Petroleum Corporation (EGPC) seeks to buy 202,000 tons of Liquefied Natural Gas (LNG) to be received via Suez and Alexandria ports within October 2016, reported Al Mal News. The news was released based on two tenders' documentation for LNG imports, which showed that EGPC sought to purchase 35,000 to 37,000 tons of LNG cargo that contains 0.1% sulfur in the first round. In a second tender, EGPC has requested five cargoes that contain 30,000 to 33,000 tons of 0.1% sulfur LNG each, to be received through Alexandria and El Dekheila ports, with delivery dates also scheduled for late October.

Furthermore, the Egyptian Natural Gas Holding Company (EGAS) took steps to import LNG to cover demands with imports of 89 LNG cargos for $2.2b. In addition,

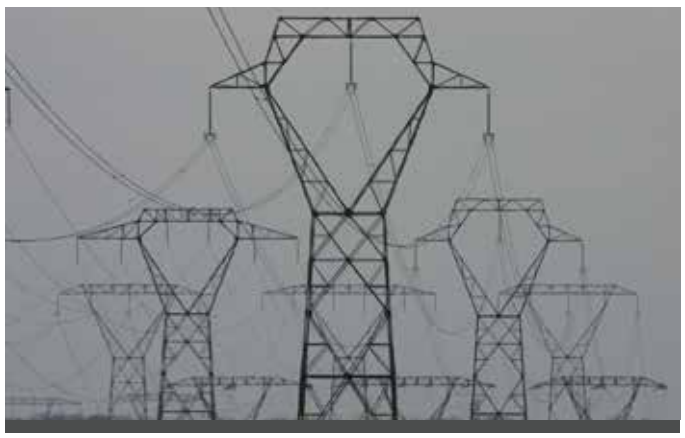
EGAS signed four development agreements with foreign investors to develop Zohr, Atol, Harmton, and Merit gas fields in the Mediterranean in order to produce 3bcf/d of gas with investments amounting to $19.5b. EGAS has executed eight development projects including drilling 14 exploratory wells and 26 enhancement wells with an initial capacity around 780mcf/d of gas, 11,400b/d of condensates with investments reaching $2.1b. As a result, the steps have helped Egypt to increased its natural gas production to 4,360mcf/d.

EGAS's CEO, Mohamed Al Masry, stated that during the fiscal year of 2015/2016 EGAS made 14 new discoveries that increased the total gas reserves reaching to 31.5tcf of natural gas and 38mb of condensates.

Meanwhile, EGAS supplied gas for various national sectors, with consumption rates for power generation reaching 62%, manufacturing consumption at 23%, and residential and vehicle consumption reaching 5%. It also provided 10% of production to petroleum and derivatives.

Additionally, since the beginning of September, EGPC has been supplying the domestic market with 1.1m LPG tanks on a daily basis to resolve gas shortages. The Egyptian Ministry of Petroleum stated that the government continues its efforts to regulate the distribution of Butane, with a push to increase supplies of gas tanks to meet household demands and avoid distribution bottlenecks, Egypt Oil&Gas informed. Gas delivery to various locations has proceeded during 2015/2016 as EGAS connected 715,000 household and 36 towns and villages located in Upper Egypt and Nile Delta to the national gas grid.

Siemens Invested $8.4b in Egypt's Energy



Siemens Egypt's CEO, Emad Ghaly, stated that his company has invested around $8.94b in Egypt's energy sector. Siemens focused on high-efficiency natural gas-fired power plants and wind power installations that will increase the country's power generation capacity by more than 50%, as the facilities are expected to add an additional 16.4 GW to the national power grid, reported Daily News Egypt.

Ghaly concluded that Siemens will also deliver up to 12 wind farms in the Gulf of Suez and West Nile areas, comprising around 600 wind turbines and an installed capacity of 2 GW.

Siemens Egypt is currently working together with its local partners Elsewedy Electric and Orascom Construction to finish constructing three power plants. The company expects to start operations at the Beni Suef facility in December, while operations in Burullus and the New Administrative Capital plants will commence in January 2017.

In addition, within the scope of Siemens' power project, 11 H-class gas turbines are being delivered to Egypt, along with generators. The German firm is also increasing its local manpower during the construction phase of the power plants. It is in the process of selecting a contractor for the detailed design and construction of a turbine blades factory in Ain Sokhna.

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Iran Is Boosting Oil, Gas Activities

Iran is busy expanding its oil and gas activities through new export deals and by building new oil export terminals. According to recent news, Iran is to export 6m barrels of crude oil to India, which seeks to build up its strategic reserves, after talks with the UAE were stalled, Oil Price reported.

The Indian state firm Bharat Petroleum Corporation will buy 4m barrels in two very large crude carriers (VLCCs). Mangalore Refineries and Petrochemicals Ltd will import 2m barrels, as India's refineries are looking for more oil after the country's import negotiations with UAE were also bogged down over commercial terms, according to Press TV. The National Iranian Oil Company (NIOC) is set to supply Iranian Mix grade, which would fill half of the Mangalore storage facility in Karnataka.

To date, India has increased Iranian crude imports by approximately 600,000b/d as of August, the highest amount in the last fifteen years.

Furthermore, Iran's Pars Oil and Gas Company's Managing Director (POGC), Ali Akbar Shabanpour, said that final stages in the development of South Pars platforms 19A, 21, and 18B for the country's giant gas field are underway, with them coming on stream by late 2016 or early 2017 at the latest. Shabanpour added that the platforms will produce 500mcf/d of natural gas after they are fully developed, according to Iran Daily News.

South Pars is divided into 28 development phases and holds 40tcm of natural gas, accounting for about 21% of the world's reserves, and approximately 50b barrels of condensate, informed Tasnim News.

In similar veins, the National Iranian Oil Company's (NIOC) Director for International Affairs, Mohsen Qamsari, said that NIOC expects to complete a pipeline and a terminal near Kharg Island by the end of 2016, wrote Reuters, which will come in preparation to start exporting the new grade crude, known as West Kharoon. Qamsari said that initial production of the new grade is just under 300,000b/d, making it key in boosting Iranian production.

Located in 57km northwest of Bushehr in the Persian Gulf, Kharg Island is Iran's biggest oil export terminal. Iran currently produces more than 3.8mb/d of crude, with a possibility of boosting output to 4mb/d.

LNG Gas-Up Operations Deployed in Jebel Ali

Excelerate Energy has announced that, in collaboration with Dubai Supply Authority (DUSUP), it has completed the first commercial gas-up operation at DUSUP's Jebel Ali liquefied natural gas (LNG) import terminal via Excelerate's floating storage and regasification unit (FSRU), Explorer, LNG Industry reported.

The FSRU gassed-up all five tanks of a 173,000cm LNG carrier, in a 17-hour period. DUSUP's ability to utilize the FSRU for these operations will allow LNG vessels departing regional dry docks avoid having to travel significant distances to perform this required step in the LNG cargo cycle, making Dubai a full-service LNG hub, according to PR News Wire.

Following the FSRU's recent upgrades, the Explorer is now able to provide gas-up, cool down, and loading services for LNG carriers. In addition to this, it now includes an LNG bunker port, allowing it to service small scale LNG off-takers.

In 2010, DUSUP completed the construction of the LNG import terminal in the port of Jebel Ali, which allows for the import of LNG via an FSRU. The terminal is located 35km southwest of the city of Dubai and provides natural gas for power generation and other industrial uses.

Iraq Resumes Oil Exports via Kirkuk

A pipeline linking Iraq's Kirkuk field to Turkey's Ceyhan port was repaired after its operation was halted in mid September. A flow test took place and operations are expected to return to normal exports levels of more than 90,000b/d, reported Trade Arabia.

The disruption in the pipeline occurred due to technical failure in a tube pump in a field near Dibis, 45km northwest of Kirkuk, which caused crude to spill. Repairs have taken longer than originally planned, yet operations are expected to resume shortly, according to Financial Tribune.

Egypt Oil&Gas had previously reported that Iraq has resumed pumping oil from fields operated by state-run North Oil Company (NOC) via a Kurdish pipeline to Turkey in August. About 70,000b/d of oil are being pumped through the pipeline controlled by the Kurdish Regional Government (KRG).

In previous news, Iraq's oil exports from its southern ports were reported to have risen to 3.2mb/d on average in July, up from 3.175mb/d in June, as the OPEC nation increased crude production. Fields operated by foreign companies in southern Iraq also contributed to the July increase.

Oman, Iran LNG Pipeline to Cost $1.5b

A planned sub-sea natural gas pipeline to link Iran and Oman is expected to reach a higher estimated cost of $1-1.5b after the two countries had to change the project's route and design to avoid waters controlled by the UAE, reported Reuters. The planned pipeline would allow Oman to use Iranian gas for domestic needs as well as to export it to global markets as liquefied natural gas (LNG). It will have the capacity to carry 1bcf/d of gas, with the chance to raise it up to 2bcf/d due to high demand in the region, according to Al Arabiya.

Tethys Oil's Output Grew by 5% in Oman

Swedish producer Tethys Oil said its share of oil production from two onshore operations in Oman, before the government's take, was more than 12,400b/d in August, a 5% increase from July levels, United Press International reported. Tethys Oil, the largest onshore license holder in Oman, has a 30% interest in Block 3 and 4 in the Sultanate, with partners Mitsui E&P Middle East at 20% and operator CC Energy Development S.A.L at 50%. The company's share of production in the oil blocks amounted to 1.09m barrels in the second quarter of 2016, compared with almost 850,000 barrels in the corresponding period of 2015, according to Reuters.

Arabian Drilling to Buy Dalma Energy

Saudi Arabia's Arabian Drilling Company (ADC) has shown interest in purchasing Dalma Energy, in a deal which could value the land rig operator at more than $500m, Ecofin Agency Oil and Gas reported. ADC is interested in Dalma's assets, including those in Saudi Arabia, Oman, and Algeria, according to Gulf Digital News. Initial deal talks began a few months ago and the potential transaction is in the due diligence stage, with US investment bank Goldman Sachs hired to arrange the sale. The agreement is expected to close by the end of October. Dalma Energy is owned by a consortium of investors through Saudi-based Al Qahtani Investments.

Oman Extended Block 50's EPSA until 2020

Oman's Ministry of Oil & Gas has extended the exploration and production sharing agreement (EPSA) with Masirah Oil Ltd. for Block 50 for another three years from the end of the current phase, with the agreement's validity expiring in March 2020, Rigzone reported. The Manarah-1 well drilled in the first quarter of 2016 confirmed the presence of a source rock and a working petroleum system in Block 50 concession, which has an area of 17,000 sq km, according to Times of Oman. Masirah Oil is currently finalizing plans to drill another exploration well in Block 50 in early 2017.

Saudi, China to Invest $4b in Petchem Project

Saudi Basic Industries Corp (SABIC) expects the company's greenfield petrochemical complex in Ningxia Hui Region of China to cost $3-4b and be finalized by 2020, according to Reuters. In May, SABIC signed the project development agreement with China's Shenhua Ningxia Coal Industry Group. The project will help the Saudi company to geographically diversify their operations and feedstock. The agreement includes certain commitments from the Ningxia Group to provide support and incentives to the project, while also outlining a framework for coordination and cooperation between the companies on one side and the government on the other, in connection with the project approval process, wrote SABIC website.

Eni Connects Sahara Desert Well to Tunisia's Grid

Italian energy company Eni connected the Laarich East-1 well, in the Sahara desert of Tunisia to production grid, United Press International reported. Production tests revealed a delivery capacity of approximately 2,000 b/d of oil, confirming the upside potential of the concession identified through a recent 3D geophysical survey carried out on the permit, according to World Oil.

Laarich East-1, approximately 700 km south of Tunis, is 5km from the oil treatment center in the concession and reaches a final depth of 4,111m.

Amid positive results of the well, Eni continues explorations in Tunisia with the drilling of additional prospects with what it mostly has on site so that it can go into full-scale production if the opportunity is there.

Despite that the country is reported to have significant formations of oil in shale deposits, with recoverable reserves of as much as 1.5b barrels, Tunisian oil production steadily declines and some companies announce withdrawal from the country.

In this sense, a UK gas company, Petrofac, is threatening to leave Tunisia and end its investment if protests over jobs that have disrupted gas production for nine months are not stopped immediately, informed Reuters.

Since January, Petrofac has been forced to disrupt gas production in Tunisia because of sit-ins by people seeking jobs. Violent protests erupted and the army intervened to protect the company in Kerkennah Island in southern Tunisia, according to TVC News.Tunisian Energy Minister, Hela Cheikrouhou, said: "Petrofac officials told us they will be forced to declare force majeure and resort to international courts for their losses if the production will not return immediately," as the company provides about 13% of Tunisia's natural gas needs. Officials have declared that the import of gas from Algeria, aimed to make up for the shortfall caused by Petrofac's production disruptions, has cost the government about $100m.

Protestors are hoping to pressure Petrofac as previously, other workers achieved success through sit-ins. In early September, Tunisia's state-run phosphate companies announced an agreement to hire 2,800 new workers after protests over jobs halted production and threatened to stop exports.

Russia to Supply Bahrain with LNG

Russia's Gazprom and the state geological exploration services company Rosgeologia have signed memorandums of understanding with Bahrain's state-owned National Oil and Gas Authority (Noga Holding) in the areas of liquefied natural gas (LNG), and oil and gas exploration, Reuters reported.

Bahrain, looking to cover a shortfall in domestic gas supply, is building an 800mcf/d LNG terminal, expected to start operations in July 2018.

The two countries also agreed to expand their cooperation in LNG as Moscow is considering boosting its offshore exploration in the kingdom.

The first memorandum of understanding was signed by Russia's Gazprom and Bahrain's Noga Holding when Russia's President Vladimir Putin met Bahrain's King Hamad bin Isa al-Khalifa in Moscow, according to S&P Global Platts.

Furthermore, Noga signed a memorandum with Russian firm JSC Rosgeologiya (RusGeology). The agreement aims to strengthen bilateral partnership between the two nations in the field of geophysical studies. According to TASS News Agency., the alliance is to focus on exploration of reserves and production of oil and gas, with a five-year program for geological exploration offshore Bahrain.

Gazprom is currently developing its LNG sales and transportation in the region and in Asia. The gas major plans to increase its own production. At present, Gazprom supplies LNG to more than ten countries including China, India, Britain, and the UAE.

Libya's AGOCO Boosts Crude Output

Libya's Arabian Gulf Oil Company (AGOCO), a subsidiary of the country's National Oil Corporation (NOC), has raised its crude output to 210,000b/d after production resumed at the Nafoura and Hamada fields, reported Reuters.

AGOCO spokesman, Omran al-Zwai, said 80,000 barrels of crude had so far been pumped from the Nafoura field to Zueitina port, one of three terminals seized earlier in September by forces loyal to the eastern Libyan commander, Khalifa Haftar.

This comes as Libya boosted crude production by more than 70% since August with some of the country's oil fields resuming output and export terminals in the OPEC country are reopening for their first overseas loadings in two years, according to Bloomberg. Head of Oil Measurement Department at state-run NOC, Ibrahim Al-Awami, said that the North African nation's crude output rose to 450,000b/d after work resumed at some oil fields. However, armed conflicts and political disputes continue to hobble the country's production, which slid to 260,000 barrels in August.

Meanwhile, NOC is looking to charter an Aframax tanker to load 80,000t of crude oil from its major Ras Lanuf terminal and deliver it to Zawia refinery.

Loading dates were scheduled for mid-September, reported Trade Arabia.

Scatec Solar Adds 22 MW to Jordan's Power Grid

Norwegian solar developer Scatec Solar, has started operating a 22 MW photovoltaic (PV) plant in Jordan, which is developed in partnership with local ECP European Jordanian Renewable Energy (EJRE) and considered the company's third solar park in Jordan. This facility brings the Norwegian developer's installed capacity in the country to 43 MW, wrote PV-Magazine. The plant is situated approximately 225 km south of Jordan's capital, Amman, and covers 51 hectares, with annual electricity production estimated to exceed 52,000 MW, which is sufficient to meet the clean energy needs of 10,000 local households.

Iran, Total to Resume Oil Swap with Caspian Sea

Naftiran Intergraded Company Sàrl, a Swiss-based subsidiary of the National Iranian Oil Company (NIOC), and France's Total will sign oil swapping deal for around 200,000b/d. This agreement signals the revival of oil swapping between Tehran and the Caspian Sea countries, reported Iran Daily. Oil swap between Iran and Caspian producers was suspended in 2010, halting a process which saw Iran importing 100,000b/d of crude into its Caspian ports and delivering equivalent volumes on behalf of its partners in the Persian Gulf, according to Today.Az. Furthermore, the world's largest oil trader Vitol and BP have also held successful oil swap negotiations with NIOC.

Algeria Expands Gas Exports

A source at the Algerian state energy company, Sonatrach, said that the country expects to produce more than 9bcm/y of additional gas output, when three projects come online during 2017, Al Arabya reported.

Sonatrach stressed that the three projects will not experience any further delays, as Touat Gas project is set for February 2017 with an estimated output of 12.8mcm/d, Timimoun for March 2017 with 4.6mcm/d, and Reggane will provide 8mcm/d in June, according to Upstream Newspaper.

Meanwhile, Algeria is also moving forward with other developments within the gas market with the revival of Tiguentourine gas plant to resume full production for the first time since a militant attack in 2013, and the discovery of a huge potential of gas around the fields of Akabli and Tidikelt, in addition to Alrar's project in the east that will deliver gas and oil.

Algeria is expected to export 50bcm of gas by the end of 2016 to Europe, an increase of 15% compared with 2015. The country's gas output is projected to reach 141.3bcm in 2017, 143.9bcm in 2018, 150bcm in 2019, and 165bcm in 2020.

Algeria's Sonatrach, also achieved an 8% increase in total oil exports in late August 2016, reaching 71.5mtoe, compared with the 65.4mtoe for the same period a year before. The group recorded a 43% boost for its year-to-date exports by pipeline during the same period, according to All Africa.

Moreover, the Algerian Oil Minister, Youcef Yousfi, stated that the country will start looking for unconventional gas deposits and study the use of nuclear power in an effort to diversify its energy sources, Interfax Energy reported. The government will begin studies on nuclear power with a view to adopting it within about 10 years.

Additionally, the country is still weighing options to meet its long-term energy demands. Yousfi added: "We are going to intensify exploration in the near future, especially in regions that have not been explored yet. We are going to look for oil and gas in shale and compact formations."

Lastly, the country is also seeking to speed up the introduction of renewable energy resources, particularly solar, wind, and geothermal power.

Riyadh Signed Energy Deals with Beijing, Tokyo

Saudi Arabia signed 15 preliminary energy and housing sector agreements with China, upon Deputy Crown Prince, Mohammed bin Salman's meeting with China's Vice Premier, Zhang Gaoli. The agreements include bilateral collaboration on oil storage, water resources, cooperation on science and technology, and cultural cooperation. The agreements are part of the kingdom's efforts to strengthen relations with China, reported Reuters.

The Deputy Crown Prince's visit aims to challenge the image of Saudi Arabia depending only on oil exports and to promote alternative investments in the country.

In addition, Saudi Electricity Company (SEC) signed memorandums of understanding (MoU) with different Chinese and Japanese firms that showed investment interest in the kingdom's renewable energy projects, Reuters informed in related news.

The signed deals cover financing, building, and operating power projects, in addition to investments in renewable energy, within the kingdom, as well as providing energy consultancy, infrastructure surveys,

and waste management. Furthermore, SEC agreed with Shanghai Electric to boost local content in Saudi power services and to invest in independent power producer projects, according to Utilities-Me.

SEC officials met with representatives of the Industrial and Commercial Bank of China, and signed agreements with Power China, Mitsubishi Corporation, Tokyo Electric Power Company (TEPCO), and JGC Corporation.

Iraq Seeks Refining Investors

Iraqi Oil Minister, Jabbar Al Luaibi, is revisiting a program announced four years ago to build four new refineries and has invited international oil companies to fund the construction of new facilities as the country looks to expand its downstream capacity, Oil and Gas 360 reported.

Iraq is offering either a build, own, operate, or a build, operate, transfer contract model for new refineries, where the private sector constructs the facility, operates it, and eventually hands it over to the government, according to S&P Global Platts.

Through this move, Al Luaibi stated that the ministry plans to double Iraq's crude oil storage capacity to 24m barrels via international investments. Although the country has struggled to attract private investment after finally breaking with its tradition of state control over the oil industry, case in point is the Nassiriyah integrated project, which includes the development of an oil field and a 300,000b/d refinery.

The project has been offered in various forms to investors since 2008, but is still to find one. A bidding round, most recently scheduled for 2013, has been delayed indefinitely.

Iraq's push to expand its downstream market comes as the country's crude oil production stabilizes at just over 4mb/d, with exports reaching more than 3mb/d during August.

GE to Operate Iraqi 3GW Power Plant

GE has signed a multiyear $520m agreement in Iraq with Mass Energy Group Holding. The contract includes operation and maintenance services, as well as GE's advanced digital industrial solutions for the 3GW gas-fired Basmaya power plant, Diesel & Gas Turbine Worldwide reported. GE already has an agreement with Mass Energy to provide Basmaya with eight units of its advanced gas turbines and four units of its steam turbines. The Basmaya plant is 40km east of Baghdad and is being developed in two phases, with each delivering 1,500 MW of energy, as Power Engineering International informed.

Kuwait to Build Oil Refinery in Pakistan

Kuwait Petroleum Corporation received approval to develop an oil refinery in the coastal area of Balochistan in Pakistan, The Express Tribune reported. The project will reduce the need to import refined petroleum products to the country. Kuwait Petroleum had expressed interest in exporting furnace oil and jet fuel as part of an existing arrangement with Pakistan, and the company was looking to install an oil refinery in the coastal area of Balochistan with storage facilities. The Economic Coordination Committee (ECC), the highest economic decision-making body in Pakistan, approved the Kuwaiti investment bid to build the refinery, according to News Pakistan.

Iran, Russia Began Work on Two Nuclear Reactors

Russian and Iranian firms began work on two additional reactors at Iran's nuclear power plant on the Gulf coast at Bushehr. The two units will add over 2,000 MW of nuclear power generating capacity over a ten-year period and will cost up to $10b, the Daily Mail reported. Iranian Nuclear Chief, Ali Akbar Salehi, said that "according to the timetable envisaged, the first and second units will be constructed respectively over 108 and 126 months with the cooperation of Russia's State Atomic Energy Corporation (Rosatom)," wrote Tehran Times. As a spin-off of the project, desalinations facilities with a daily capacity of 200,000cm will also be established.

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Nigeria's Crude Output Declined

Nigeria suffered the biggest decline in crude oil production among members of the Organization of Petroleum Exporting Countries (OPEC) in August seeing a drop of 130,000b/d, with its total levels reaching to 1.468mb/d, down from 1.52mb/d in July, Punch reported citing OPEC's monthly oil market report for September.

The decline in output has caused Nigeria to lose its status as Africa's top oil producer to Angola, when oil production during March reached 1.677mb/d, compared to Angola's 1.782mb/d. Even July's boost to the country's production volume at 1.75mb/d of oil did not help Nigeria regain the top spot from Angola.

While speaking at a one-day meeting with stakeholders in the oil and gas sector, the Nigerian National Petroleum Corporation's (NNPC) Managing Director, Maikanti Baru, blamed the decline in production on activities of vandals and militants in the Niger Delta. He further asked the government to engage the various host communities in developing a partnership framework to find a lasting solution to the present unrest, informed Channels Television.

According to Vanguard, Baru comments came as oil companies, operating in Nigeria, struggled to deal with difficulties in repairing pipelines and other production infrastructure that suffered from debilitating damages by militant attacks.

In related news, OPEC's crude oil production stood at 33.24mb/d in August, a decrease of 23,000b/d from July's volume. Crude oil output increased mainly from Saudi Arabia and Iran, while Nigeria and Libya showed the largest drops.

Furthermore, oil markets have been plagued by a supply glut pushing prices to near 13-year lows of below $30 per barrel at the start of 2016.In a joint statement after a meeting at the G20 Summit in China, Russia's Energy Minister, Alexander Novak, and Saudi Arabia's Energy Minister, Khaled al-Falih, said they have agreed to set up a "joint monitoring group" to offer recommendations aimed at preventing price fluctuations. They said that "the particular importance of a constructive dialogue and close cooperation between the largest oil-producing countries [is in line] with the goal of supporting the stability of the oil market and ensuring a stable level of investment in the long term."

South Africa Nuclear Power Debate

South African Energy Minister, Tina Joemat-Pettersson, said that the country will put out requests for proposals on a nuclear procurement process, at the end of September. The intended facility was planned to have a production capacity of 9,600MW, Reuters reported.

Joemat-Pettersson remarks were in response to South African power utility Eskom stating that it was moving forward with plans to construct and operate multiple nuclear installations and power reactors in Eastern Cape and Western Cape provinces. The firm had extended a 30-day period for interested parties to comment on its plan to build the nuclear plants.

South Africa has previously declared its intentions to build new nuclear power stations to reduce its heavy dependence on coal, but critics have said the costs will be prohibitive and have questioned the transparency around the process.

Accordingly, Deputy President, Cyril Ramaphosa, told delegates of the National Council of Provinces that the government has not entered into a nuclear deal with any country, adding that the nuclear program would be based on affordability and sustainability, informed News24.

Ramaphosa comments came as worry over governance in state firms grow. Denmark's Jyske Bank AS and Futuregrowth, South Africa's biggest specialist fixed income manager, said they have shelved plans to lend more than $123m to three state companies, including Eskom, citing concerns about how they are being run, informed Bloomberg.

Ghana to Push Oil Output to 240,000b/d by 2020

Ghana could become the fourth biggest oil producer in sub-Saharan Africa by 2020 once two new offshore fields come on stream, to push total output above 240,000b/d, Reuters reported.

Ghana's Tweneboa-Enyenra-Ntomme (TEN) field came on stream in August and is expected to increase output to a peak of around 80,000b/d. The Jubilee field, which started producing oil in 2010 and is operated by UK's oil company Tullow, could bounce back to production of around 115,000b/d, once it solves technical problems with its production vessel.

Furthermore, the Sankofa field operated by Italian company Eni is due to open in August 2017 and should produce around 30,000b/d, while US Kosmos Energy plans to connect the Mahogany-Teak-Akasa (MTA) field to the Jubilee oil production ship, according to Eyewitness News.

Gas from TEN, Sankofa and MTA could eliminate the need for Ghana to import gas from Nigeria through the West African Gas Pipeline Company.

The West African country is currently producing around 103,000b/d, ranking it ninth, far behind leaders Nigeria and Angola, which produce an average of 1.867mb/d and 1.754mb/d, respectively.

Ghana's highest oil production rates occurred in 2015 at 37.4mb, with the country earning just over $3b in petroleum revenues from 161.7bm of crude oil sold between 2011 and 2015, wrote Ghana Web.

African Petroleum to Cede Oil Stake in Gambia

African Petroleum Company (APC) has signed a letter of intent (LOI) with an anonymous international exploration and production company in regards to interests in licenses A1 and A4, offshore Gambia, reported Offshore Energy Today. The LOI represents a non-binding commercial proposal regarding the possible acquisition of interests in the licenses, where APC holds a 100% operated working interest in both blocks, according to Agence Ecofin. APC has concluded a 3D seismic survey with data covering about 2,500km^2. An updated assessment of prospective oil resources, has estimated the net unrisky reserves to stand at 3,079m stock tank barrels.

South Sudan to Open New Oil Facility in Palouch

South Sudan's Petroleum Minister, Ezekiel Lol Gatkuoth, said that the country plans to establish a new oil facility in Palouch oilfields in October, with the aim of amplifying daily crude production in the country, Agence Ecofin reported. Gatkuoth added that even though production was stopped because of the conflicts, oil workers in the region were safe ahead of plans to restart production in the Unity State. Furthermore, neighboring Sudan recently agreed to help South Sudan and its oil companies in repairing damages caused by war to allow quick resumption of production at its oil wells. Revenues from oil account for 98% of South Sudan's annual budget.

Angola's Block 15 Produced 2b Barrels of Oil

Angolan state oil company, Sonangol, declared that the accumulated output from Block 15 offshore oil concession has reached 2b since 2003. The deepwater block's production is currently at about 320,000b/d of oil, Macauhub reported. Located about 145km west of Zaire province, Block 15 encompasses an area of 4,144km^2, and is operated by Esso Angola, a subsidiary of ExxonMobil, according to Agence Ecofin. The company owns a 40% stake in the development alongside ENI Angola with 20%, BP Exploration with 26.67%, and Statoil Angola with 13.33%. The block's production comes from four Floating Production Storage and Offloading vessels, Kizomba A, Kizomba B, Mondo, and SaxiBatuque.

Kenya Expands Mombasa Oil Port

Kenya inaugurated the first part of a new container terminal at Mombasa, to increase the volume of cargo handled by East Africa's largest seaport by 50%. The Kenyan President, Uhuru Kenyatta, who opened the $29.7m facility, said that a bigger cargo capacity for Mombasa was crucial, Reuters reported. Kenyatta said: "Kenya itself discovered oil in Turkana and intends to export its first shipment in June 2017," according to All Africa. The new terminal can handle 550,000 twenty-foot equivalent units (TEUs) yearly and will ramp up Mombasa's existing annual cargo handling capacity from 1.05m to 1.6m (TEUs).

Tanzania Slated as Regional Oil, Gas Leader

Tanzania is set to become East Africa's leading country in the exploration of oil and natural gas within the next decade, reported ESI Africa.

Tanzania's Minister of Energy and Minerals, Sospeter Muhongo, stated that through investments in acquiring knowledge in the sector the country could achieve the goal of being the first in oil and natural gas exploitation. He added: "Since the sector is new in the country, we intend to have at least 500 trained experts in the area of oil and natural gas in 10 years' time."

In related news, companies interested in East Africa's hydrocarbons have started putting their capital into the country's proven resources and at decent fiscal terms. Accordingly, Japan International Cooperation Agency (JICA) and the African Development Bank (AfDB) have shown interest in financing Tanzania's gas distribution network, All Africa reported. The project is expected to take a minimum of 15 months to complete and cost just over $75m, with the development of at least 15 compressed natural gas (CNG) stations. The Tanzania Petroleum Development Corporation (TPDC) initiated the project in 2013, but failed to find financing after completing detailed design in 2014.

Furthermore, Ophir Energy announced that its partner, Shell, is making preparations to commence exploration drilling offshore Tanzania before the end of 2016, Ecofin Agency reported. The $20m drilling program will comprise of two wells on Blocks 1 and 4, and it will target an excess of 1tcf of gas, according to Daily News.

Despite current investment deals, funding remains low due to a decline in global prices, with revenues standing at $2.5b in 2015, as opposed to $4.6b in 2012. Therefore, oil governments in East Africa, including Tanzania, must offer an attractive environment by reforming their regulatory, fiscal, and licensing systems, in order to attract oil and gas investors.

Tanzania's current regulatory environment is uncertain despite the promulgation of the Petroleum Act in 2015, which allowed increased central government involvement. This fueled investors' fears of project delays relating to developing liquefied natural gas (LNG) processing plant. With 57.1tcf of natural gas reserves, Tanzania must ensure that its fiscal and regulatory structures are in place to support the government's gas plans.

Nigeria Sues Big Oil for $12.7b

Nigeria is suing several leading oil companies for $12.7b of crude oil that allegedly was exported illegally to the US between 2011 and 2014, ABC News reported. The government alleges that the companies did not declare more than 57mb of crude oil shipments, informed WBAL radio. The Federal High Court in Lagos started the cases filed against Nigerian subsidiaries of US multinational Chevron, British-Dutch Shell, Italian ENI's Agip, France's Total, and Brasoil of Brazilian Petrobas, reported Reuters. Eni stated that the Nigerian claim dates back to March 2016 for a payment of $160m. However, Eni believes the claim has no ground.

Power Africa to Get $1b in US Aid

More than $1b in debt and financing commitments from US agencies and private investors under Africa energy initiative, Power Africa, have been finalized, Reuters reported. The US is on track to fulfill its initial $7b commitment over five years, and several departments and agencies have announced that they have expanded Power Africa commitments, according to All Africa. The initial $7b pledge has mobilized about $52b in additional external commitments, including about $40b from the private sector. Power Africa is tracking about 500 energy deals across the continent to install 10,000MW of new generation capacity, connect 20m new customers, and improve electric reliability.

Kenya's Oil Reserves Threatened by Somali Dispute

Kenya's quarrel with Somalia to hold on to possibly lucrative Indian Ocean's oil and gas reserves continues with a maritime border disputes surfacing, as the case goes before the UN's top court, The Daily Star reported. The hearings are the first stage in Kenya's battle against a 2014 claim by Somalia for the redrawing of the sea border, a move that would affect three of Kenya's 20 offshore oil blocks which the country awarded to Italy's EniSpA, according to The Nation. The disputed triangle of water stretches over more than 100,000km^2 and it is believed to hold valuable deposits of oil and gas.

Nigeria Seeks $10b in Petroleum Assets Sale

The Governor of the Central Bank of Nigeria, Godwin Emefiele, stated that Nigeria will sell off some of the Nigerian National Petroleum Corporation's (NNPC) and Nigeria LNG Limited's (NLNG) oil and gas assets to help revive the country's economy, with an expected yield of $10b, reported All Africa.

Emefiele said: "In April 2015 I had opined that there was need for the government to scale down or sell off some of its investments in oil and gas, particularly in the NNPC and NLNG as at that time when the price of oil was around $50-$55 per barrel."

He added that Nigeria commissioned some consultants to study the proposal who advised the country to sell 10% to 15% of their holding in the oil and gas sector. At the time, the sale was estimated to make up to $40b, according to The Cable.

The Senate President, Bukola Saraki, also agreed, as he stated that "asset sales could help avoid a worst-case scenario of entering an International Monetary Fund program."

Emefiele's comments concurred with those of Nigerian businessman and owner of Dangote Group, Aliko Dangote, who advised the country to sell national assets instead of resorting to loans from the World Bank or IMF. This proposal came as the federal government has demanded $635m from multinational oil companies, Agip and Total, for undeclared crude oil shipped out of the country between 2011 and 2014.

Qatar to Join Exxon in Mozambique's Gas Plans

Qatar Petroleum is interested in joining US ExxonMobil in buying a multibillion-dollar stake in Mozambique's giant gas acreage owned by Italian energy group Eni, as the company looks to reduce a 50% stake in the development as part of plans to sell off $5.62b of assets over the next two years, Reuters reported.

Egypt Oil&Gas reported in August that Eni had reached an agreement with ExxonMobil to sell its multi-billion dollar stake in the planned offshore liquefied natural gas (LNG) development project in Mozambique, with Exxon operating the onshore liquefied natural gas (LNG) export plant and leaving Eni in control of the Area 4 gas fields feeding it.

Located in Mozambique's Rovuma Basin, Eni's Area 4 is one of the biggest discoveries of recent times, holding about 85tcf of gas. Qatar Petroleum has been considering the field and adjoining acreage of Anadarko Petroleum Corporation, as the company's CEO, Saad al-Kaabi, recently confirmed that the group was looking at assets in Africa, according to ET Energy World. The company is in talks with Exxon and Eni on some kind of involvement in Mozambique which could involve a joint investment with the US major oil companies, but the deal will not be a classic joint-venture structure.

Exxon and Qatar Petroleum are already close business partners in Qatar, where Exxon's technical know-how helped the Arabian Gulf state to develop its gas resources and become the world's biggest as well as lowest-cost LNG producer.

OILFIELD SERVICE COMPANIES ADOPT A NEW ROLE

By Noha Yasser

Oil drillers have struck a "Gusher"! This is, however, a gusher they do not want, one of red ink signifying unprofitable budgets. The overproduction of crude oil, along with low price per barrel, has led to less demand for crude, resulting in loss of revenues for oil service companies. The question is, can service companies survive the severe fall in revenues, and still remain healthy enough to perform on future contracts?

Low Oil Prices Challenges the Sector

The global low crude prices have caused revenue loss for Oilfield Service Companies (OFSCs) from $454 billion in 2015 to $294 billion in 2016, down 35%, according to Spears and Associates, a research-based company providing consulting to the petroleum industry. To compensate for these losses, research and development sections' expenditure has been cut, and thousands of workers were laid off. As a result, prices for equipment and services ascended. Due to that, many oilfield services providers were left poorly positioned in the market as they started turning into higher-cost, technically challenging applications sellers.

OFSCs were thus forced to cut their spending even further and stayed financially submerged. With low oil prices and weak crude demand, producers cut the cost of extraction, Steven Knabe, the Director of Halliburton Consulting stated in April 2016, according to IBM's website. In doing so, they are now in a dire need of selecting "the right development strategy," which is "a multibillion-dollar decision for a large oil and gas field," said Knabe. In order to do so, service companies started "using high performance computing of the IBM Cloud, [though which] we can run very detailed simulation models and evaluate a wide range of field development options, which translates into better field development plans for our clients and a competitive advantage for our business," Halliburton Consulting Director concluded.

From Survival Strategies to New Partnerships

Service companies are thus left to their own devices to continue supplying production infrastructure and capacity in the currently demanding environment. It is expected that this will allow them in the future to compete and grow when the market recovers. But until then, no joyful news is on the horizon. Industry experts predict further shrinkage. They emphasize that cost-cutting as a survival strategy for service companies will, by itself, not be enough for them to remain sufficiently robust to launch future projects successfully, wrote Stock Market Editor at CNBC, Bob Pisani, in an August 2016 article - Here Is How Companies Can Survive $40 Oil.

Oil industry analysts thus concur that seeking new alliances and business collaboration may provide some new opportunities. Mergers come into consideration. Pisani explained that service sector mergers may be a drastic step to take, but it is an increasingly likely one. There are dozens of small- and mid-size service companies such as Concho Resources, Cimarex Energy, Pioneer Natural Resources, and Whiting Petroleum that may adopt this path. But this is only one side of the story.

A merger strategy involves another level of a potential organization. As a UK-based analyst at KMPG, a global network of independent member firms offering audit, tax and advisory ser-


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vices, Alan Kennedy, and Zoe Thompson of KPMG in the US explained in a March 2016 report - Unsung Workhorses of the Oil Industry – Oilfield Services Companies, "future problems from the current weak market can be resolved by ending the practice of keeping oilfield service companies as contractors, and instead partnering with them." This necessarily implies that OFSCs would need to transform accordingly to live up to their new role.

The Practice of Integrated Services

OFSCs are the workhorses of the oil industry involved in finding and extracting oil and gas. It is undoubtedly, "a solutions-driven industry," as Kennedy at KPMG previously stated. They must therefore continually advance their portfolio in order to prosper.

In an article published by The Fuse, a news and analysis portal, in March 2016, Leslie Hayward stated that currently, there has been a growing demand for OFSCs to be capable of performing all aspects of hydrocarbon production with a marked boost from 5% of service companies' sales in 2010, up to an expected amount of 25% at the end of the decade. Those that can respond to this challenge adequately have thus started transforming into the so called integrated or all-in-one entities, as Hayward noted. In the March 2016 report by KPMG, the authors further noted that service companies are now required to focus on the technological advances that would come as integrated into production services scheme on an on-going basis. As a result, oilfield services giants such as Schlumberger and Halliburton currently provide almost every service required to explore, develop, and produce from a reservoir.

Health, Safety, Environment (QHSE) management system of service companies comes as one of key aspects that can lead to a success story in collaboration with oil drillers and among service sector competitors.

"Future problems from the current weak market can be resolved by ending the practice of keeping oilfield service companies as contractors, and instead partnering with them."

Alan Kennedy, KPMG in the UK, and Zoe Thompson, KPMG in the US

QHSE scheme connects the services operator system to the driller and other sub-contractors. Nonetheless, responsibility for Health, Safety, and Environment (HSE) thus goes to the operator i.e. the rig contractor, whose well site managers are responsible for day-to-day activities. Yet, as service companies tend to take over these aspects of hydrocarbon industry, it is important for them to outline an efficient and effective management structure internally for these purposes.

Quality, Health, Safety, Environment

Halliburton is one of service companies that have adopted required health and safety mechanisms through internal structures. The company created a business model that incorporated all aspects of QHSE in one system - Halliburton Management System (HMS). Their mission - 'Journey to Zero' - was launched in 2013 with a bold vision to fully eliminate safety and environmental incidents on site.

"The foundation of this has been our leadership commitment, robust management system, and the competencies and commitment of people – all core elements of our Journey to Zero. It defines six elements that provide a roadmap for advancement. The elements remain consistent each year, while specific focus areas evolve annually. These elements include Leadership Commitment - a personal quality shared by Halliburton's leaders; Halliburton Management System - a company policy; Continuous Improvement, Training and Competency; Communicate and Address Risks," explained Halliburton's HSE Quality Management, Mohamed Adel, in an interview with Egypt Oil&Gas (EOG) in August 2016.

"We will maintain our focus on safety, sustainability, and service quality, [because] working safely is something we simply cannot compromise."

Mohamed Adel, Halliburton's HSE Quality Management in Egypt

Integration practices, no doubt, pose some challenges for the relationship between service companies on one side and oil and gas majors on the other, as well as in relation to service companies' internal management structures. Primarily, major oil companies must have confidence that service firms can reliably deliver project design and engineering expertise, secure workers' safety, and strive for a clean environment at the same time. In order to meet these requirements, an integrated Quality, must remain the bedrock of our company's culture," added Adel.

In line with this strategy, "we will maintain our focus on safety, sustainability, and service quality," because "working safely is something we simply cannot compromise; it is fundamental and

Waleed El-Ghamrawy, HSE Coordinator at Halliburton discussed in an interview with EOG how the company is progressing in efficiently implementing individual projects by following the Journey to Zero guidelines. Halliburton is protecting its operations from EHS negative impacts on the upstream oil and gas sector as a whole, securing its employees' safety, and ameliorating negative environmental effects despite environmentally hazardous processes.

Thanks to the adopted techniques and structures, Halliburton's HSE performance has continued to improve and its service quality has gradually enhanced even in increasingly complex and demanding projects, as the company's representatives shared with EOG. This was achieved also because the company developed its internal set of guidelines in Environmental & Occupational Health and Safety schemes in accordance with Good International Industry Practice (GIIP).

Speaking about the environmental aspects, El-Ghamrawy said that Halliburton's "Total Environmental Incident Rate (TEIR) was 10% lower in 2014 than in 2013, at 0.96 incidents per 200,000 working hours. This is the result of our increased focus on process adherence."

The company is dedicated to constant reduction of greenhouse gas emissions across the value chain, which is guaranteed as Halliburton modifies the equipment it deploys according to environmental requirements. The use of diesel engines that meet the Tier 4 standard is critical. The standards set strict requirements for non-road diesel engines in order to lower productions of particulates, nitrogen compounds, and other pollutants by as much as 90%.

In this respect, Halliburton appears to be a unique OFSC, because it designs and manufactures its own equipment itself in order to ensure compliance with environmental obligations. "With increased numbers of production wells, operators and communities are finding new ways to reduce costs and environmental impact. Production waste management that includes the four R's - reduce, re-use, recycle, and recover - are particularly effective" in the case of Halliburton, El-Ghamrawy stated. In this way, the company has managed to reduce its waste production by 22%, decreased waste management costs by 36%, and reduced pad construction by re-using 92 cubic meters of drilling cuttings.

Furthermore, as Halliburton's HSE Coordinator El-Ghamrawy added, "the company also applies all protection mechanisms for the health and safety of its employees across the production phases," i.e. during the drilling, construction, and decommission. Halliburton supplies Personal Protective Equipments (PPE) to all its workers on site. El-Ghamrawy elaborated further saying that no employee of Halliburton works in an environment of noise above 85 decibels without hearing protection. All electrically charged equipments are marked with warning signs to prevent shock or electrocution incidents, and, in addition, all cables and equipment are checked for worn or exposed insulation.

El-Ghamrawy concluded that when hiring contractors, OFSCs should focus on contractual obligations for hazard management activities, meaning that safety procedures would need to be specified in and required by the signed contracts. It is only in this way that service firms can aspire for a role as an integrated professional oilfield services provider.

"With increased numbers of production wells, operators and communities are finding new ways to reduce costs and environmental impact.

Waleed El-Ghamrawy, HSE Coordinator at Halliburton in Egypt

Prospects for Service Firms

Practices that Halliburton adopted show one possible way to approach difficult times in the global industry market.

The service firm modified its strategy towards an integrated service provider in order to offset its losses, which only in the fourth quarter of 2015 amounted to $667 million, as a company's press release informed in January 2016.

Halliburton has also recently sold its engineering unit, Kellogg, Brown, and Root (KBR) due to lagging profits, aiming for more integrated solutions such as wellbore and stimulation isolation, cement squeezing operations, drill stem testing (DST), and tubing conveyed perforating (TCP) activities. Technological innovation also stood in the center of Halliburton's services with advanced technology in tool design, materials, and delivery, and a portfolio of drillable, retrievable, and stimulation service tools.

As the role of oilfield service companies in improving oil fields changes, they are becoming the main co-operators of oil and gas fields in terms of creating more effective practices, enhancing productivity, and developing new ideas. Without having to depend on oil companies as such, OFSCs, despite falling oil prices, can develop mechanisms to sustain their business through successful integration practices, competitive alliances, and new partnerships with oil and gas producers.

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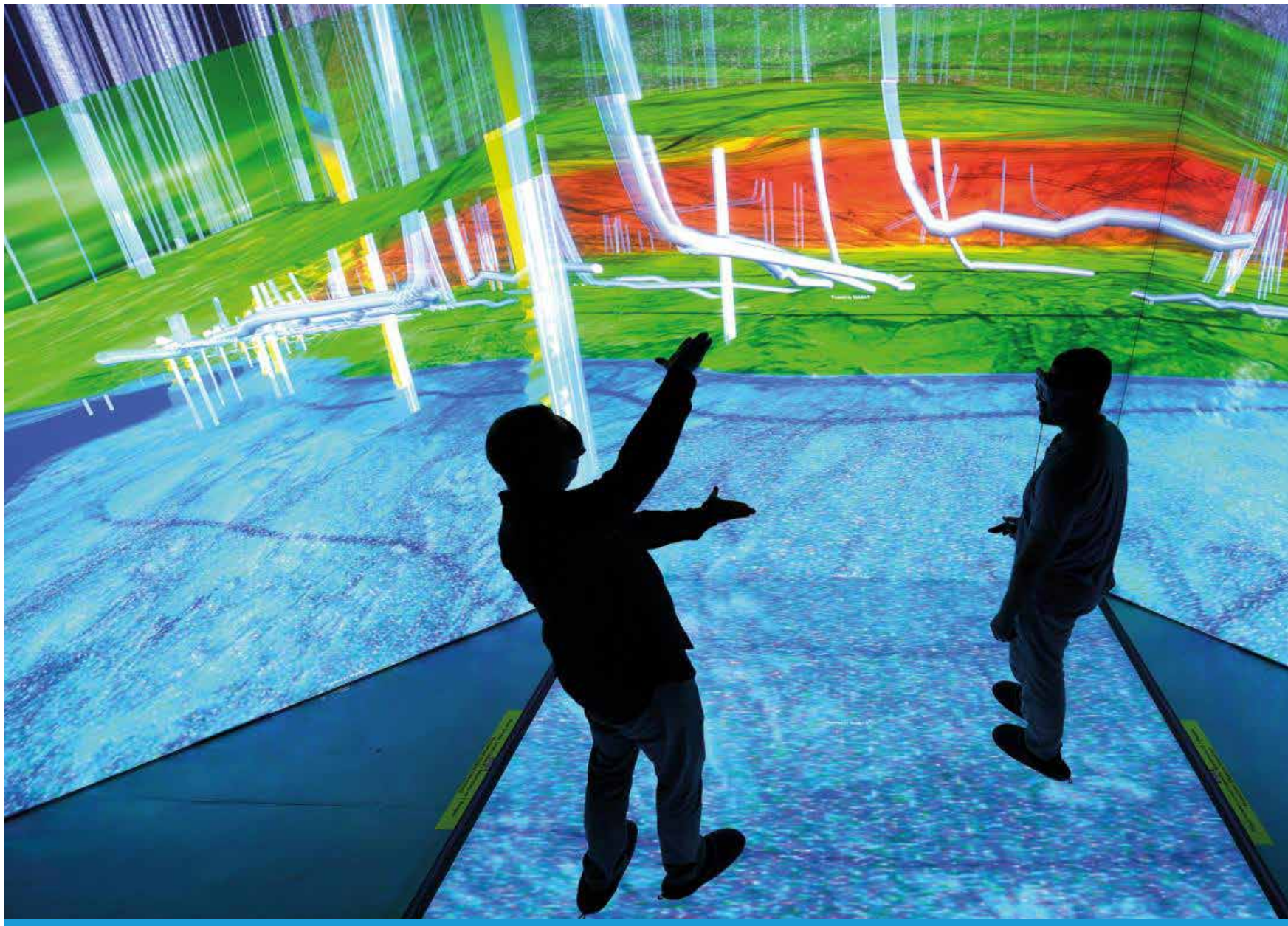


SEISMIC DATA FIRMS CONTRIBUTE TO UPSTREAM

By Amira Badawey

Drilling costs for oil and gas concessions can reach over $100 million. Calculations per field average between $5 to $10 million for drilling and completion expenses, as is the case for Eagle Ford and Bakken in the US, and the drilling of AG-115 well in Abu Gharadig field in Egypt, costing $6.5 million. Therefore, companies do not want to explore wrong locations, only to discover poor-yielding assets at the end of the process.

In their quest to learn what lies below the surface, decide how to bring it out, and better manage their reserves, energy firms contract Geoscience services from companies like CGG, Halliburton, Schlumberger, and Baker Hughes, to acquire, process, and analyze seismic data for thousands of sub-surface wells. These companies render an array of services in order to cover the demand from upstream firms across all spectrums of exploration, development, and production.

In an interview with the Eni's CEO, Claudio Descalzi, about the Egyptian Zohr gas field discovery as part of the Shourouk concession, published by Eniday in June 2016, he said that "each discovery is the result of the geological knowledge and insights of a great team. The whole company is involved and brings its contribution." This emphasizes that the involvement of Geoscience service providers is considered a partnership with contractors on the optimization of a resource.

Local Geoscience Operations in Egypt

In Egypt, the role of Geoscience begins with the tender process for new concessions. Contractors are required to buy preliminary data packages needed for oil and gas exploration as part of their bidding procedure. The Egyptian government allows companies to pay a nominal fee to review these pre-bidding data-packs, with the option to fully purchase the information if needed. These fees can reach up to $1 million, paid in a pre-exploration stage.

Some controversy has surrounded this issue as it leaves upstream companies with additional financial burdens. Furthermore, the overpricing of these data packs scares away smaller, innovative, more flexible firms that can actually accommodate their products and services to an individual country's needs. Egypt can overcome these concerns by expanding the role of Geoscience firms across reservoirs' lifecycle from discovery to bidding to production.

Geoscience's Contribution to Upstream Value Chain

Geoscience plays a significant role in all phases of upstream. During the exploration stages of a discovery, petroleum firms rely on seismic analysis to search for commercially economic subsurface deposits, by recording, processing, and interpreting of artificially induced shock waves in the earth. Based on the data generated during this phase, companies can reach a decision whether or not to move forward with drilling.

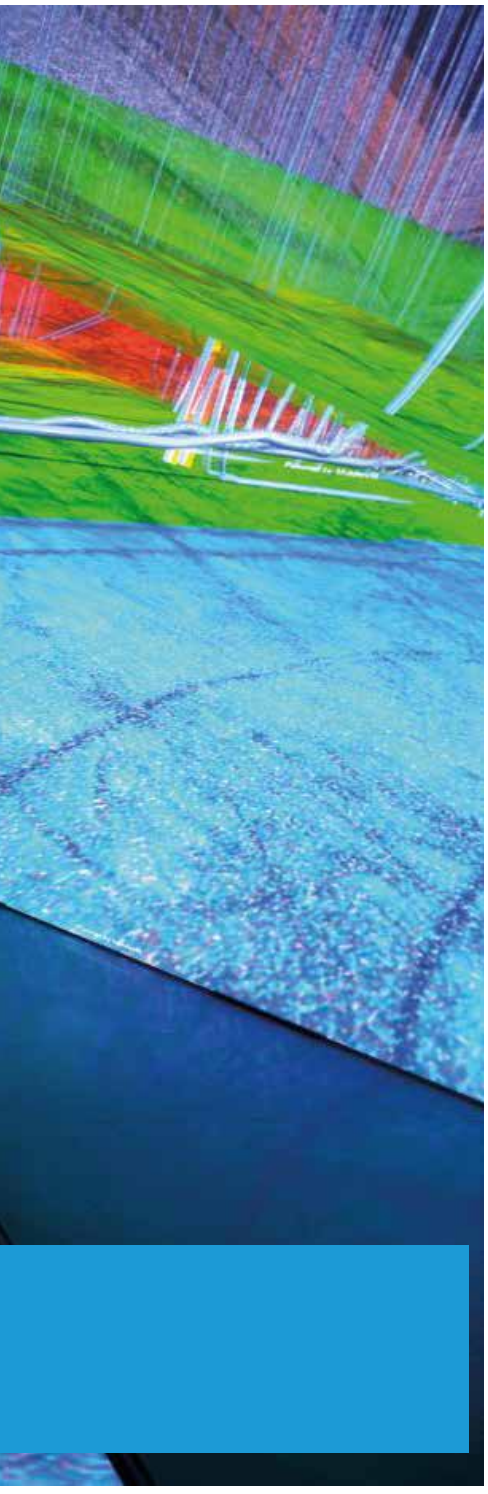
In the 2016 interview, Descalzi further stated: "One thinks that geologists are all numbers and formulae, but the creative mind of a geologist is full of 3D images, enlargements of colored rocks, and seismic lines. In fact, geologists are more inventive than one might think, and they can even compose an authentic 'digital picture' of an exploration."

The role of Geoscience continues well into field development and production through reservoir modeling that uses realtime feedback to optimize asset output.

The Role of Geoscience in Production Forecasting

Exploration companies must first determine the likely output of a reservoir in order to allocate the necessary resources. When this decision is data-led, operators have more confidence in the efficiency of the extraction process.

Surveying of potential sites involves monitoring the low frequency seismic waves that move through the soil below the surface of the earth. Probes are put into the ground at the spot being surveyed. They register if the pattern of the waves is distorted as they pass through oil or gas. In the past, this involved recording thousands of readings. Yet, due



to technological advances in Big Data, companies can now collect millions of readings, thus vastly increasing the amount of data gathered during exploration. This gives a far more accurate image of what lies beneath. Data from any prospective oil field is then compared to that from thousands of others around the world, to enable geologists to make more accurate recommendations about where to drill. This has propelled the oil and gas industry into the petabyte-hexabyte realm of Big Data, as recent news published by Rigzone indicate.

In Egypt, Apache relied on seismic datasets to generate prospects for the Western Desert concession that the company acquired in 2010, said Khalda Petroleum Company's (KPC) Development Geologist, Tim Brady, for Apache Corporation's website. Accordingly, Apache has drilled 46 development wells, increasing oil and condensate production 57% to 31,500b/d, and hiking sales gas production 163% to 95mcf/d.

Another case in point is Eni's decision to invest in Zohr field. Descalzi explained how the company decided to move forward after buying the Egyptian government's data packages. On the basis of the evaluation made by the International Egyptian Oil Company (IEOC), and with the lack of available seismic data in the provided packages, what emerged was an area in block 9 with a possible huge bio-structure, Eniday website further elaborated. Due to insufficient inputs, Eni reached further. The company extended the search to Egypt's neighboring countries. All of the data from the scientific drilling carried out in Cypriot waters on the top of Eratosthenes were re-examined. As Eniday website pointed out, in April 2015, the Italian company called the geologists and geophysicists to a meeting to ask: "Are we confident that the structure exists?" The answer was "Yes." "Are we confident that we have a controlled structural closure with the existing seismic 2D?" The same unanimous answer. Eni's response was then "Ok, let's go for it."

In order for oil companies to leverage collected seismic data and gain insights that help increase drilling and production performance, while preventing environmental/safety problems, they rely on specialized service providers. Such companies possess the necessary know-how to collect, manage, and rapidly analyze seismic, drilling, and production information. Furthermore, they have the necessary expertise to deal with and store enormous data sets.

Performing Seismic Analysis for Exploration

Forecasting stage necessarily leads into relevant seismic analysis for exploration purposes. Seismic surveys are a primary tool of exploration companies, both onshore and offshore. Dimensional seismic surveys have lowered finding costs and allowed exploration for reserves not locatable by other means.

Artificial seismic energy is generated by vibratory mechanisms through the use of specialized equipment. Sound waves are bounced off underground rock formations and the waves that reflect back to the surface are captured by recording sensors. Analyzing the time the waves take to return, integrated with existing borehole well information, aid geoscientists in determining the location of prospective drilling targets.

"One thinks that geologists are all numbers and formulae, but the creative mind of a geologist is full of 3D images, enlargements of colored rocks, and seismic lines."

Claudio Descalzi, Eni's CEO

"Each discovery is the result of the geological knowledge and insights of a great team."

Claudio Descalzi, Eni's CEO

The International Association of Geophysical Contractors explained the differences in onshore and offshore data collection processes. In onshore data acquisition, the energy source for a seismic survey is more commonly a Vibroseis. In marine operations, a specialized vessel tows a seismic streamer, which is a collection of cables with seismic sources and hydrophones attached. The seismic sources use compressed air to produce acoustic energy. The hydrophones capture the returning sound waves.

Geoscience service providers thus possess necessary expertise to collect and interpret required data during the analysis phase, as well as the know-how on managing related equipment in terms of logistics and transportation.

Reservoir Modeling

The data recorded from a seismic survey is originally in its raw form and must be further processed in order to provide a layout of reservoir modeling. Before it can be used, it must go through a series of computerized processes, which include filtering, stacking, migrating, and other computer analysis. These processes make the data useable and require powerful computers and sophisticated software. Processing of data can be very expensive and time-consuming, depending on the size of the area surveyed and the amount of data acquire.

Selecting an Experienced Geoscience Firm

The resulting processed data must be interpreted by the geophysicists or geologists. All seismic data is subject to interpretation, where no two experts will interpret data identically. Hence, selecting a Geoscience service expertise is crucial.

The Shorouk concession in Egypt was previously held by Shell for ten years, during which nine wells were drilled without commercial results. Shell missed the Zohr discovery, because they were looking at a classic geological analysis of the Nile Delta (Miocene sands), not the sea-mount carbonate variety that led to the recent discovery. If analysts working on Shorouk data did not shift their analysis paradigm, Eni would not have moved forward with their bid to explore Zohr field.

Therefore, the know-how of geoscientists plays an important role in optimizing upstream operations, and this leverages the role of the service providers as they have access to a diversified talent pool and flexibility in allocating specific expertise to specific developments, depending on the geological composition of the area under survey.

Furthermore, advances in technologies led to the availability of more powerful computers and more sophisticated processing techniques, therefore geoscientists are able to reprocess seismic data acquired in earlier years in order to create new opportunities for exploration.

Geoscience in Egypt

This is not always the case in Egypt, however, as vintage seismic data can hinder development and enhancements in existing concessions, as was the case with Apache Egypt. KPC's Exploration Manager, Martin Oldani, stated that acquiring modern 3D seismic data was a key to Apache's success across the Western Desert. According to Apache Corporation's website, Oldani added that "BP [British Petroleum] and GUPCO [Gulf of Suez Petroleum Company] had initiated a survey in the WD-33 concession at the Abu Gharadig field. Apache was able to improve the seismic design template in the WD-30 and WD-09 surveys that followed."

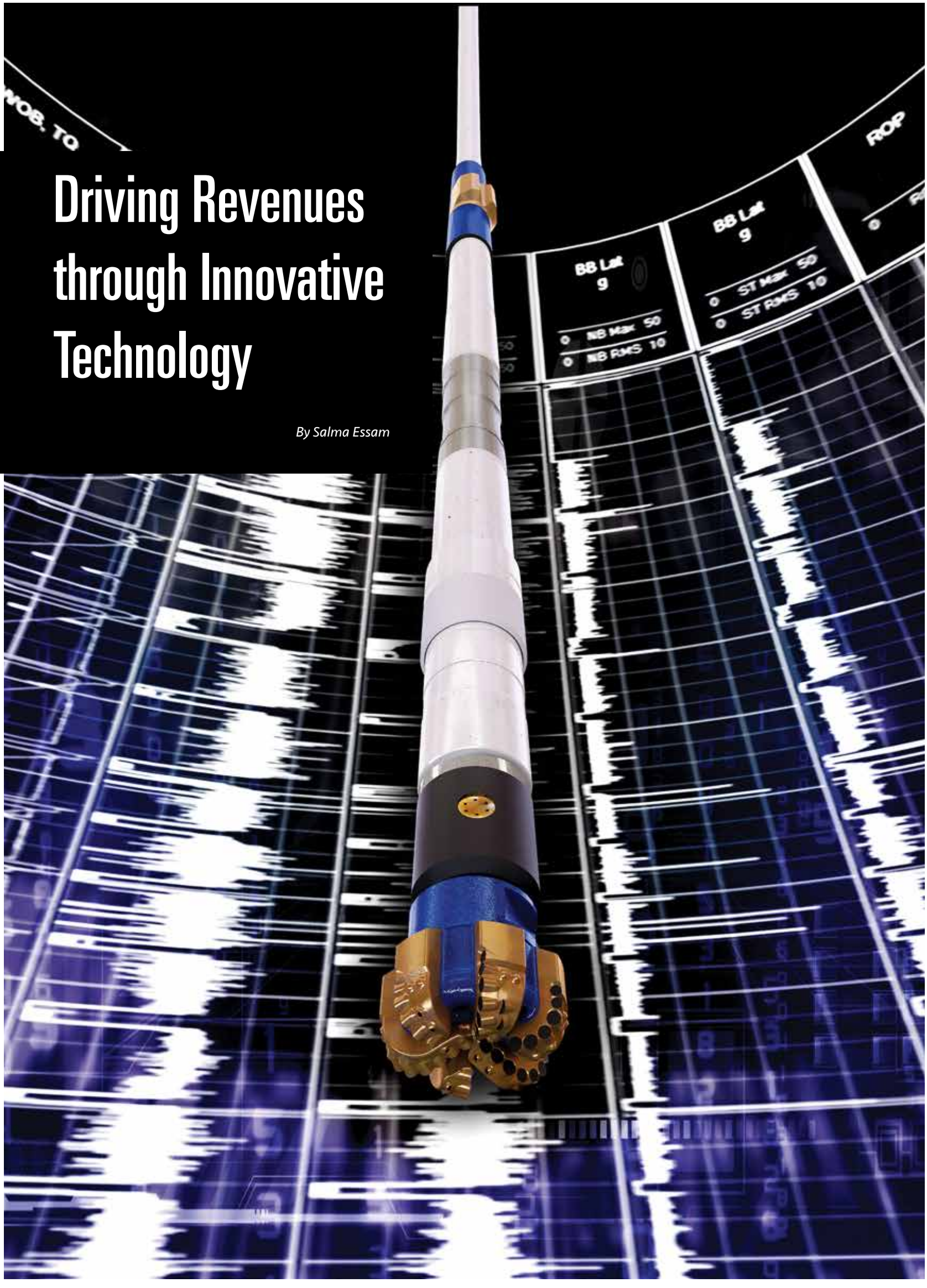
Despite these achievements in Egypt, the country lacks the necessary tech-power to analyze large amounts of complex seismic data collected during a concession's lifecycle. Case in point, seismic data related to Zohr discover, was processed at the Eni's Green Data Center, 50 meters away from the company's headquarters in San Donato. The center houses High Performance Computing (HPC) super computers used to process seismic data and simulate oil and gas reserves, resources that were not available to the Egyptian team.

Seismic data is a fundamental right to all exploration and development companies. It is considered to be a service that the Egyptian government should promote in order to stimulate growth and productivity in the Egyptian energy sector. In addition, it should encourage and facilitate the involvement of independent service companies to perform seismic analysis for concessions at the pre-tender phase, and possibly continue well into exploration, working with upstream contractors. This will eliminate the unnecessary rework caused by the acquisition of pre-bidding data-packs since international oil companies (IOCs) perform their own seismic analysis, once they are granted licenses for concessions. IOCs then hand over this new dataset to the Egyptian General Petroleum Corporation (EGPC) once their contract expires.

In line with that, the country should regulate the availability and accessibility of seismic data during all stages of resource development, by allowing collaboration between geoscientists in the market and facilitating access to and investments in data centers, super computers, and databanks to enhance the seismic data segment performance.

Driving Revenues through Innovative Technology

By Salma Essam



National Oil Companies' (NOCs) growing interest in new kinds of partnerships has created new opportunities for oil field service companies. As profits and revenues of service firms highly depend on the scale of exploration activities, innovative technology has become an essential component for revenue generation. Giant oil field service actors such as Halliburton, Schlumberger, and Baker Hughes have thus resorted to this business strategy in a market where crude prices have witnessed an unprecedented decline.

The Challenges and Future of Profit Generation

There are several companies that were influenced by the dramatic collapse of oil prices since June 2014 when a barrel of crude oil cost about twice its price today. According to Price Water Coopers and Strategy& consulting team report - Surviving the Worst: It's Time for Oil Services to Address Shortcomings and Find Strategic Solutions - published in 2015, "in its third-quarter 2014 results, Transocean booked a charge of $2.79 billion for the drop in the value of deepwater rigs and warned that more write-downs were possible."

troducing new technologies that entail high costs, leading to missed opportunities by the operators who could have reaped the benefits of best in class technology.

Oil Market to Stabilize?

The current market trends, nonetheless, indicate that the service companies business may soon witness a boost. According to the Organization of Petroleum Exporting Countries' (OPEC) Q1 report in 2016, the crude oil price is expected to rise as the supply-demand curves will stabilize. Oil expert and President of Cornerstone Analytics, a research firm, Michael Rothman, predicted in an in-depth exclusive strategy session with CNBC in June 2016, that oil prices will surge above $85 a barrel by the end of the year. The International Energy Agency's (IEA) oil market report forecasts that the oil production demand will exceed supply already in the third quarter of 2016. According to Bloomberg's analysis published in February 2015 – Oil Prices Could Jump 50% by the End of 2016, Goldman Sachs Group Inc. forecasted that the global surplus that fueled oil price decline to a 12-year low will shift to deficit as the US output falls. Saudi Oil Minister, Khalid El-Falih, previously stated that the Saudi kingdom would work with other producers to stabilize the market.

"The volume of work in the market has dropped significantly and a decline in revenue and the result is therefore inevitable."

Peter Berdowski, CEO Boskalis

Similarly, in the first half of 2016, Dutch offshore and dredging services provider, Boskalis, recorded a net profit of $165 million, gaining revenue of $1.3 billion compared to $1.75 billion in the same period of 2015. According to Offshore Energy Today's Business Guide

These positive forecasts imply that more investments are likely to be injected in exploration and more bid rounds

"The constant development of technology is largely based around increasing the safety of these operations to ensure the crew and the environment remains safe."

Alastair Cole, Drilling Sales Director of Spencer Ogden Americas

from August 2016, Boskalis saw further decline as its 1H 2016 profit halved. The company's CEO, Peter Berdowski, stated: "Falling prices of oil, gas, and commodities are the dark clouds on the horizon that ultimately also affect late-cyclical companies such as Boskalis. The volume of work in the market has dropped significantly and a decline in revenue and the result is therefore inevitable."

In this highly volatile and sturdy oil market, service companies compete to provide the best service to the oil and gas players.

In turn, oil service companies' executives have been tightening their capital budgets, waiting for a price recovery. This trend has created a hurdle in in-

may take place, paving the way for service companies to provide their products and services at a high rate. Against this background, the imperative seems to be shifting away from oil prices stabilization towards efforts to push the frontiers of technical boundaries that would allow service companies to operate sustainably over a long period of time. Service companies' leaders are thus enthusiastically looking beyond cost-cutting in order to build up a viable strategy and design creative and viable solutions that would help them thrive in a prolonged period of market competition.

Innovative Solutions

Developing innovative technology has been a key point of concern and an issue of strategic importance for oil field service companies. Global service company Schlumberger has recognized the urgency to adapt its business strategy to the existing market conditions and aimed for new and innovative technological products.

The company announced at the Offshore Technology Conference in May 2016 the release of the first commercial application of microfluidic analysis technology in the oil and gas industry - Maze microfluidic Saturates, Aromatics, Resins, and Asphaltenes (SARA) analysis for reservoir fluids characterization. The Maze microfluidic SARA analysis couples novel microfluidic technology with spectroscopy. This method eliminates human subjectivity enabling precise SARA measurements, while decreasing turnaround time and use of chemicals by more than 85%.

The advantage of the Maze microfluidic SARA analysis is that it has industry-wide applications. It can be used for validating oil samples prior to Pressure, Volume and Temperature (PVT) analysis, understanding physical and refining properties, assessing crude oil value, and supporting flow assurance and geochemical studies.

President of Testing Services at Schlumberger, Amir Nessim, said: "Conventional SARA analysis requires extensive time and laboratory resources, and reproducibility has been a constant challenge." The company thus managed to over this obstacle. Presently, the microfluidic chip technology has been accepted by Association for Testing and Materials (ASTM) International Standard D7996 as the industry's best test procedure for measuring asphaltenes. He added that Schlumberger is now able to provide customers with "a sustainable method for SARA analysis that is highly accurate and efficient."

As a result, more than 1,900 asphaltenes analyses using the microfluidic chip technology and 300 SARA analyses have been successfully completed across the company's global network of research centers and reservoir laboratories, according to data provided by Schlumberger's official website.

Safety Technology in Oil Service Companies

A goal to promote a high-tech service industry and drive more revenues has stood in the focus of companies that provide services in the offshore sector in particular. Safety solutions became a priority. "The constant development of technology is largely based around increasing the safety of these operations to ensure the crew and the environment remains safe," said, Alastair Cole, Drilling Sales Director of Spencer Ogden Americas.

The evolution within the market has led offshore service companies sector towards the implementation of new operational systems, applications, and machinery. In February 2016, Halliburton introduced a new safety system for well testing, Dash 3 inch electrohydraulic subsea safety system. It is designed to help drive optimal performance and avoid non-productive time during deep-water dynamic testing. Vice President of Halliburton's Testing and Subsea Business Line, Abdallah Awara, explained that "the system delivers speedy response to critical well isolation and pressure containment." The new safety system enables immediate and precise decision making at the time of well testing operations, helps engineers achieve their intended well test objectives, while it minimizes risk and reduces rig time.

The system helps increase reliability and efficiency to offshore drilling operations, yet other technological products are to be developed in order for the sector to be able to comply with global environmental requirements.

Similarly, the safety of personnel has been on service companies' agenda since that the failure to secure a gangway to the open sea may put the whole offshore business of the oil and gas companies at risk. Barge Master teamed up with Bosch Rexroth to develop a next generation motion compensated gangway, which is designed to safely transfer personnel from ships to offshore platforms. The innovative solution that was released in late August is to be delivered to their client in the second quarter of 2017.

Integrated Environmental Technologies

Giant oil field service companies such as Halliburton, Schlumberger, and Baker Hughes provide high quality services using new technologies, and thus define the parameters of market competition. They are among those that swiftly responded to the challenges in the market and combined efforts to provide environmentally clean and innovative solutions that would give them a leverage to withstand oil price decline.

In order to conduct successful well tests, substantial amounts of oil must be brought to the surface, which is most often flared, producing environmentally dangerous emissions. These emissions are highly toxic in ecologically sensitive areas and cause harms to the atmosphere and marine environment, in the case of offshore drilling. Several service companies have already acknowledged their responsibility for preserving the marine life and act accordingly.

Halliburton has introduced the environmentally distinctive burner to quantify produced emissions. The burner has patent features such as the nozzle control which can precisely control the flow of oil and air, allowing the nozzle to be closed without any unburned fuel escaping. Utilizing the combustion air supply, these nozzles are controlled remotely and powered by an integrated pneumatic system. As the components of the control work together, they allow the burner system to individually control the position of each nozzle. The nozzles are vertically arranged with carefully overlapping patterns to allow the 'Cross Lighting' feature of the nozzle regardless of wind conditions. This feature reduces the severity of radiant heat of the rig as well.

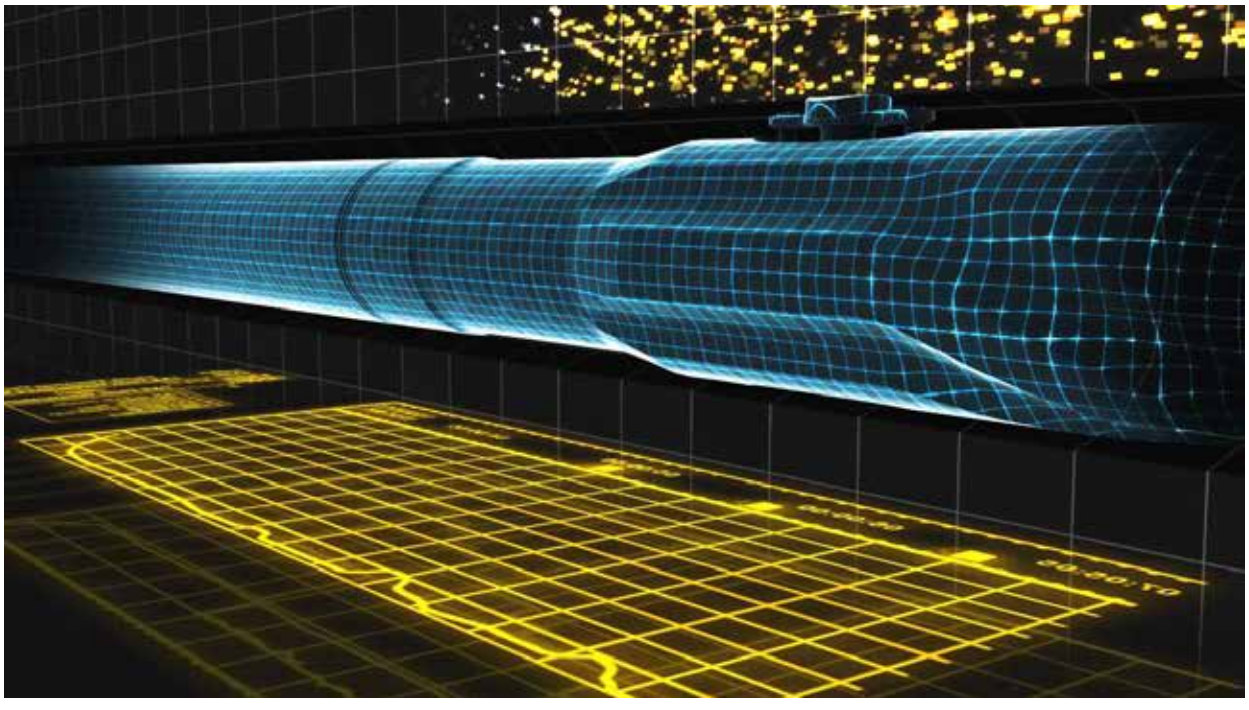
In addition, there are other features for the burner system such as the rotation system, and the burner management system, which contains the logic and controls for the entire burner control system such as safe start up for operations, remote operator interface feature, dual ignition system, combustion air utilization for pneumatic system, and system over-temp safeguards.

According to the tests, the company's distinctive burner has achieved high performance characteristics. Its fallout efficiency has reached 99.9995%, based on fallout target testing, stated Halliburton's official website statistics. Combustion efficiency stood at 99.4% and destruction efficiency reached 99.5%, with carbon dioxide emissions not exceeding 41 lb CO2/MMBtu when tested.

Based on the successful results, the product promises to increase Halliburton's revenues in the long run if the company keeps its current strategy that brings to it a competitive advantage in the market.

Baker Hughes is another high profile oil and gas service companies that has demonstrated an eco-friendly strategy in the offshore sector. To help contain fluids from escaping up the wellbores, Baker Hughes announced in September 2015 the launch of its deep shield water safety valve.

The safety valve functions at extreme depths and pressures thanks to its redundant operating system. The valve



further reduces the infrastructure costs required to maintain higher wellbore pressures during operation. In this sense, Vice President of Completions and Wellbore Intervention at Baker Hughes, Zac Crouch, said: "We are committed to protecting people, habitats and the environment, and the deepshield valve reinforces this commitment in offshore deepwater wells."

Achieving a new record of deepwater operations safety, Crouch added: "Because our rigorous safety valve testing protocols already exceeded earlier validation standards, we were able to quickly integrate the new specifications into our testing program. Baker Hughes is the first company to meet the new V1 validation, which marks a new standard for safety and reliability in the Gulf of Mexico."

In fact, service companies need to continually drive improvement for technology. This requires ongoing assessments in order for the companies to be able to tailor new equipments and solutions to their clients. The assessments must go deeper than checking with operators if everything is on track or not. Instead, platform visits by service companies' managers, frequent communication with engineers, and regular in-depth consultancy with technicians, are a prerequisite for a sustainable business strategy. With these inputs, pursuing high levels of technological innovations will significantly increase reliability of service companies' products and help them sustain a profitable business.

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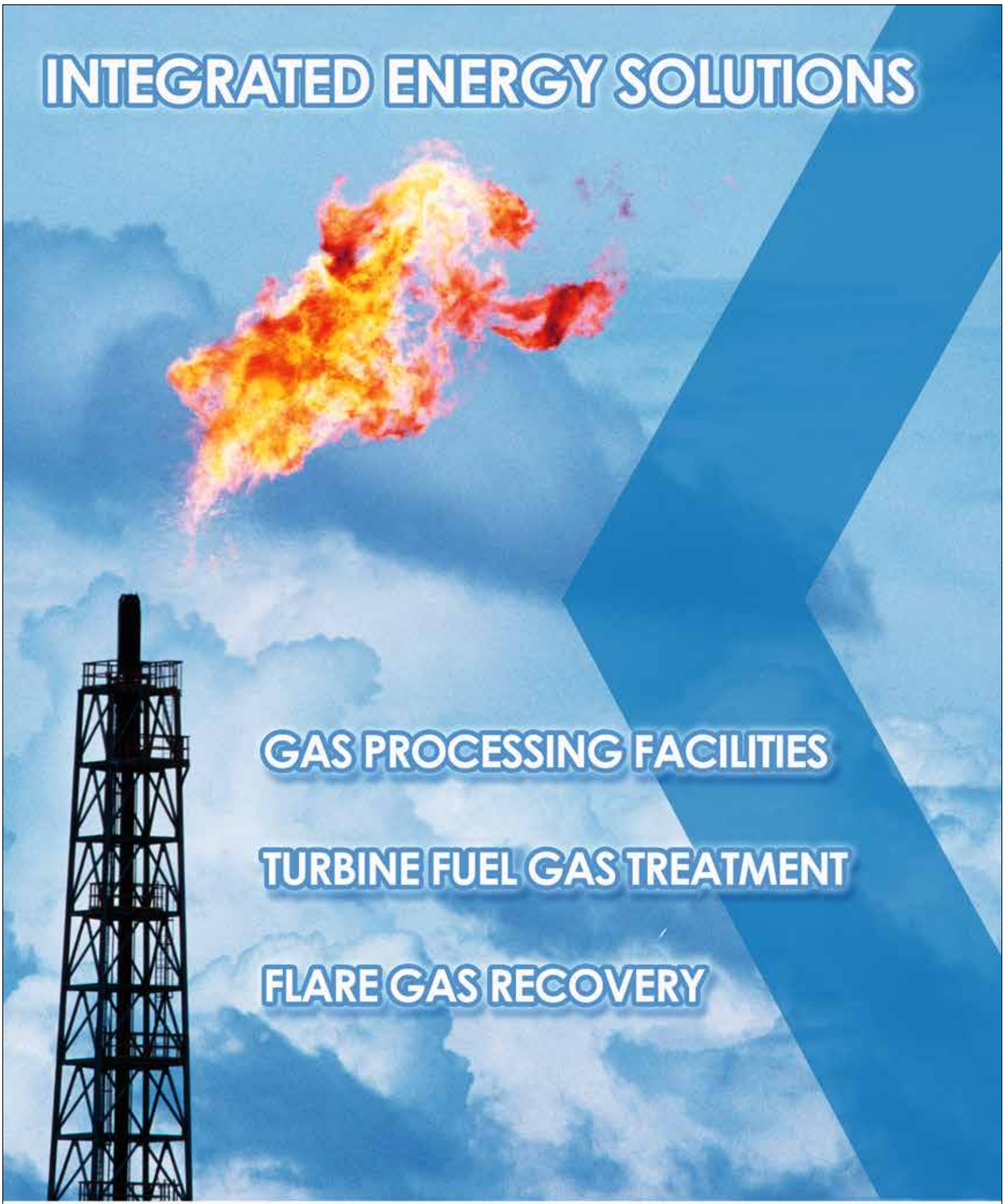

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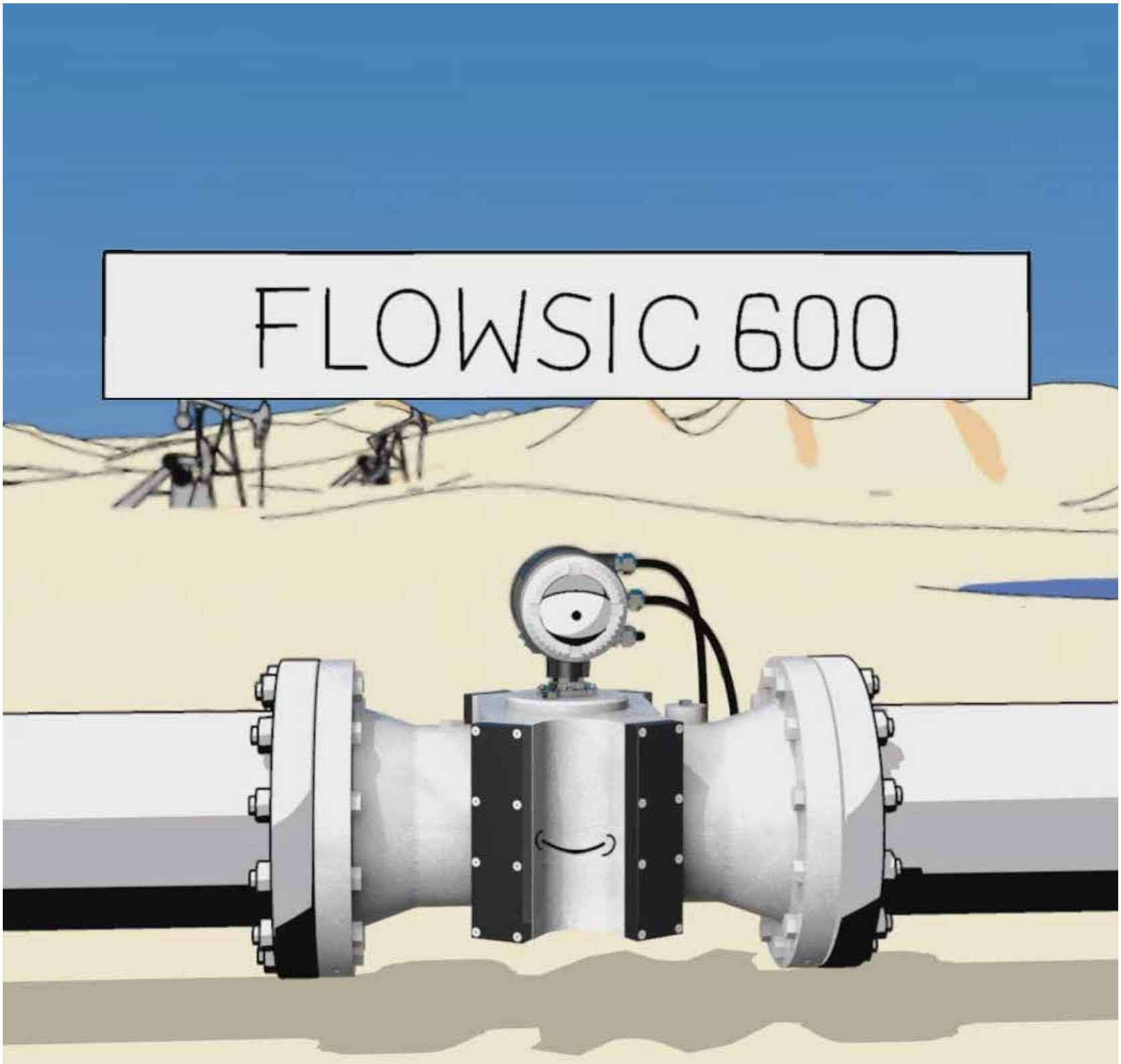

The Role of Sensors Service Companies in Global Oil Market

By Shaden Esam Aldine

Technology is vital to enhance the quality of service companies' output provided to the oil and gas industry. Skills, methods, and techniques that research and development departments (R&D) of service firms adopt, help boost production for oil and gas companies with a minimal cost and high efficiency. The developments then promise to maximize service companies' revenues.

In the light of the global low oil prices environment, oil and gas companies are facing a decline in production and expect to restrain it further over a possible freeze deal by the Organization of the Petroleum Exporting Countries (OPEC). A crude oil prices decline to below $30 per barrel since mid-2014 significantly affected the entire industry. Some major oil producing companies have slashed their budgets by 40% to 50%, and canceled as much as 50% of their planned operations, as some industry executives noted. In the Middle East and North Africa region, companies paused or stopped their drilling activities at an unprecedented level leading to a decrease in sales volume, Wika Corporation General Sales Manager, Eng. Amr Osman explained in an interview with Egypt Oil&Gas.

Furthermore, costs for field exploration and development rose and are now higher than generated profit, which leads these companies to take other measures in order to effectively counterbalance the decline.

This raises many questions, for instance, in relation to control and measuring companies that develop essential sensors for the energy industry. Their R&D

departments allocate resources and investments to find new adequate and financially viable solutions. Yet, their budgets have seen major reductions that amounted to 15%-16%, according to estimates by some oil and gas leaders that Egypt Oil&Gas approached.

In Egypt, in particular, oil and gas companies have been also struggling with recent devaluation of the Egyptian pound against the US dollar. As most of the equipment used in the service sector are manufactured and imported from abroad and the method of payment is in the foreign currency, which became harder to obtain, prices of products by service companies became unstable.

In the global market, nonetheless, many energy projects are planned in the long term and cannot be simply paused or cancelled. Hence, in some areas of the oil field services, market prognosis is positive. For instance, "the long-term prospects for service companies in flowmeters for oil and gas measurement remain strong," Jesse Yoder, President of Flow Research Inc. in Wakefield wrote for Flow Control in December 2015.

As sensor technologies, which help prevent risks in the upstream and downstream sectors, have been of major importance to the entire sector, this market sector is worth examining.

"The long-term prospects for service companies in flowmeters for oil and gas measurement remain strong."

Jesse Yoder, President of Flow Research Inc.

Leak Detection, Control, and Measuring Sensors

Sensors are one of key devices that guarantee safety of implemented processes in the industry. They are built on mechanisms of control and measuring of the flow of oil, gas, and other derivatives. As a dynamic factor installed in pipeline, refinery, and transportation constructions, they directly affect entire process of hydrocarbon exploration, production, and processing.

Sensors were technically invented and developed to detect and respond to different inputs that come from the physical environment such as light, heat, motion, moisture, pressure, and similar. Their outputs come as signals that are converted to readable displays at the sensor location and/or transmitted electronically through a network in order to allow necessary adjustments to the ongoing processes.

On the basis of technology, the global oil and gas pipeline leak detection sensors can be segmented as flow meters, infra-red detection, fiber optic sensors, and pressure sensors, according to a report - Leak Detection Market for Oil & Gas by Technology, published by Markets and Markets in October 2015.

Recently, the global pressure sensor market has been primarily driven by advancements in micro-electro-mechanical-systems (MEMS) technologies. The increased number of technological developments that took place in the past decade has led to a considerable reduction in the size of sensors to between approximately 0.5um to 1 mm. This has thus boosted competition in the global sensor market. Nonetheless, market turbulences drove oil and gas service companies to reduce their research and development expenses or adjust the balance between financial investments and revenues. Wika Corporation, a global market leader in pressure, temperature, and level measurement technology, faced a similar dilemma.

Wika Corporation develops comprehensive solutions based on high-quality measurement technology components and delivers 50 million quality products to over 100 countries every year. It supplies measuring instruments, which monitor and protect oil and gas operations during exploration, drilling, completion, production, and transportation, whether on offshore platforms, in remote desert locations, or at unconventional oil and gas facilities. Also pressure, temperature sensors, gauges, and diaphragm seals, providing reliable performance, ensure that the operations can continue undisturbed even at installations operating for long periods of time. Worldwide, approximately 600 million Wika measuring instruments are in use.

Anti-Corrosion Technologies for Sensors

In addition to the current global market parameters, Wika Corporation, as many other sensor service companies, faces multiple challenges. Among them is the high sensitivity of its products to external conditions that may result in the closure of oil field projects.

Shutdowns of energy projects occur rather frequently. Yet, while those planned by companies' headquarters mean that there will be a cut in revenues that can be compensated for according to strategically planned activities, unexpected problems that lead to abrupt closures in the field are more difficult to predict, therefore can be considered more risky and can hurt more.

"This [DMD] manufacturing technique enables reliable protection of sensor elements by means of a hard alloy. It makes it possible to significantly extend their lifetimes."

Markus Wolf, Head of R&D at O.R. Lasertechnologie

Service companies in sensor technologies thus face conundrum of trying to strike a balance between, on one side, costly innovative technologies that would guarantee oil and gas companies' lower costs for services, products, and repairs, and on the other external factors that can cause damage to their equipments.

Industrial sensors are sensitive components installed to function for lengthy periods of time, while subjected to extreme physical stresses in the environment. Their first and foremost enemies are corrosion, erosion, and abrasion.

"Each day, about a million barrels of crude oil, or 160,000 cubic meters, pass through a pipeline with a diameter of one meter. That is equivalent to 1,850 liters per second. Onshore gas pipelines have an extremely high internal pressure of 100 bars, which can even reach 200 bars or more in offshore pipelines. Sensor elements used to monitor the flow suffer considerable wear as a result of corrosion and abrasion. This shortens their lifetimes and necessitates costly repairs," an article published by News Cision – Additive Manufacturing Technique Extends Life of Sensors, explained in the case of a German service company that specializes in laser technologies, O.R. Lasertechnologie GmbH.

Conventional methods have proven insufficient for sensors protection. Instead, technological upgrade is believed to offer some viable solutions, as Markus Wolf, Head of R&D at O.R. Lasertechnologie told Egypt Oil&Gas in an email interview: "The R&D team of O.R. Lasertechnologie spent a year collaborating with the Fraunhofer Institute to develop a highly efficient, easy-to-install powder nozzle that works with high repeatability and is suitable for automated processes - Direct Metal Deposition (DMD)." As he further explained, "this manufacturing technique enables reliable protection of sensor elements by means of a hard alloy. It makes it possible to significantly extend their lifetimes."

A way to lastingly protect a sensor from being worn down is to coat it with Stellite. The cobalt-chromium-based alloys are difficult to develop. While the conventional approach is to apply composite clad layers with a total thickness of several millimeters, the intense heat applied during the processes is considerably mingling the sensor's material with the Stellite cladding.

Instead, to apply DMD new technique, the compact EVO Mobile laser welding system is suited as wear-resistant coatings and to carry out repairs or modifications.

"Sensors' price increase is a consequence of global rise of prices for raw material."

Wika Corporation's General Sales Manager Eng. Amr Osman

Laser technologies have thus proven to be more effective. Laser only minimally melts the surface of the sensor and merely at scattered points of time. Metallic powder, with grain sizes between 45 and 90 µm, is fed coaxially to the laser beam and permanently fuses with the object's surface. The advantages of this approach include precise deposition of the material, low heat penetration, and an undistorted, crack-free coating.

Given these advancements in technologies, service companies may strike a competitive advantage in the sensors market not only in the short term, but also in the long term projections. Adequately, sensor service companies found themselves boosting their research and development investments, which directly changed the pricing of their products. In consequence, service companies' sustainability seems rather unstable in the current disadvantageous market conditions globally.

Sensors' Price Rate Skyrocketed

For years, control and measuring service companies have been developing new products with advanced chip design, manufacturing techniques, and microstructure technology, but as their technology loops, in the same way, their price rates increase, which poses a series of obstacles in the current global market.

Sensors market has witnessed a rapid growth in price rates of between 7% to 12% until now, as industry leaders affirmed. Wika Corporation's Eng. Amr Osman stressed in an interview with Egypt Oil&Gas that "sensors' price increase is a consequence of global rise of prices for raw material."

Oil and gas industry thus finds itself under pressure over investing in services for increased prices. In the Egyptian market, the financial aspect is further exacerbated by the country's foreign currency crisis.

Forecast for the sensor market, nevertheless, promises some positive results in the near future. The global pressure sensors market is expected to reach $9.48 billion by 2020, in comparison to $6.7 billion in 2014, which is a considerable growth at an estimated Compound Annual Growth Rate (CAGR) of 5.9% between 2015 to 2020, according to a report Pressure Sensor Market by Technology, Application & Geography - Global Forecast to 2020, published by Markets and Markets in 2015.

It is in these veins that international and national service companies in the sensors sector may design their business strategies and tactics to withstand the pressure of the turbulent development in the global energy industry.

ENGINEERING, PROJECT MANAGEMENT FIRMS ALTERING OIL INDUSTRY

By Sarah Samir

Implementing projects in oil and gas industry requires companies to assign certain tasks to specialists. Project managers and engineers are needed for oil and gas players in order to avoid taking huge risks that may result in loses. In that aspect, oil and gas investors hire engineering and project management service companies, also known as Engineering Procurement Construction Service Companies like Ennpi in Egypt, Amec Foster Wheeler in the UK, and Carmagen Engineering in the US.

Engineering Procurement Companies (EPCs) play a role in any oil and gas project cycle starting from planning to geology of areas assigned to certain projects to crude processing. These companies have faced financial uncertainties in delivering project management and procurement services in the current global market. They are now searching for new ways to tackle issues and counter challenges lying ahead of them.

Risks Implicated in Energy Projects

Oil and gas projects are exposed to a series of risks. Some of them are affected by the geological nature of oil and gas fields meaning that the place of the exploration may have dry holes in which no hydrocarbons can be found. In case this occurs, there might be the risk that contracted service companies would not be able to provide agreed services, which, in turn, weighs stronger on both the contractor and the oil company. Often unpredictable weather conditions may delay production and pose another challenge on project budgets. Financial risks implicated in these scenarios relate to exploration costs as well as to fluctuating price schemes. This scenario then necessarily brings in a difficulty for a service company to gain a capacity to deploy new technologies to projects, no matter how critical this may be.

Moreover, the ways in which the global market tumultuous development translates into overall calculation of these firms can change estimated supply-demand variables. And lastly, companies' obligation to comply with governmental regulations in any country can create further obstacles for operations. As Total Registration Document 2014 published by the petroleum company Total added, oil and gas industry has to seek ways how to overcome these risks, to which increased taxes and disputes related to property entitlement also belong.

What is more, offshore oil and gas production in particular has further inherent difficulties to handle. The explosion and sinking of Petrobras' P-36 with the death of eleven workers and the Deepwater Horizon semi-submersible sinking in 2015 are there to remind us of these risks, and they stand as a motivation to pre-engineering processes, as Martin Robb and Gerald Miller wrote in an academic journal article 'Human Factors Engineering in Oil and Gas – a Review of Industry Guidance' in 2012.

Another challenge that service companies in the engineering procurement and project management sector face is related to procurement engineers themselves. They are reported to receive low payments for the long time it takes to finalize a proposal, which influences companies' profitability, Bi-Annual Economic and Capacity Survey published by Consulting Engineers South Africa (CESA) in January 2014 clearly stated.

Last but not least, the socio-economic environment in any country may also further affect oil and gas industry's performance, more specifically in relation to national strategic drives. Although nationalization of industry's assets is less of a risk in one country than in another, as mentioned in Oil and Gas Exploration Risk Analysis published on a business consultancy website, Rose and Associates, in relation to engineering and project management companies, this potential ramification of the market may have lesser of an effect on them than on stakeholders.

Nonetheless, face to face with this bulk of potential challenges, oil and gas companies opt for hiring project management specialists in order to decrease negative implications for their operations.

Engineering & Project Management Contributions

As the oil and gas industry is project specific, complexities of each and every single installation require particular managerial competencies and expertise, in order for investors to calculate relevant costs and minimize negative impacts. Engineering and project management service companies provide this specific service. They study the projects before and during their implementation and deploy requirement

equipments and proficiency.

In the pre-engineering phase of any projects for both upstream and downstream projects, the service firms offer the so called Front End Engineering Design (FEED), which aims to analyze various technical options for new development, with the objective to more clearly define the parameters of a project, Dr. Martin West explained in a report 'Assessment of the Engineering Design Capability and Capacity in the Oil and Gas Sector in Western Australia,' which was commissioned by the Department of Commerce of the Western Australia government.

But the role of the engineering and project management service companies is not limited to pre-studying projects. They also provide procurement services by defining and documenting responsibilities of the project's contracting parties and setting purchasing plans. In doing so, they seek to diminish unnecessary expenses.

In order to be able to provide the required service, these companies "need to understand more about the costs and value of the goods and services that are being delivered; they need to drive capital productivity," as Leader of Bain and Company's Asia-Pacific Oil & Gas Practice, John McCreery, explained.

Coping with the demanding and competitive market under presently tight conditions, oil and gas players would call for simplification and standardization in the business processes. To achieve this, "the best procurement teams work closely with the design teams to ensure the decisions, that affect the long term construction of the business, are taken correctly," affirmed Bain & Company's Leader McCreery.

A cost-consciousness culture for procurement teams is thus standing in the center of needed pre-conditions for a success. In order to face the oil low price environment, "procurement teams have to re-build and reset the suppliers' relationships," McCreery added. In that sense, procurement companies should integrate all the aspects of their services in order to ensure that "the right trade-offs of value and cost is made" throughout the operations.

Ennpi's Assigned Projects

Engineering for the Petroleum and Process Industries company (ENNPI) is one of the Egyptian leading engineering procurement construction companies, operating in the UAE, Saudi Arabia, the US, Qatar, Oman, Italy, Jordan, Syria Libya, Sudan, Venezuela, Algeria, and Iraq.

Its recent activities demonstrate the importance of this particular service firm's contribution to the oil and gas industry. Ennpi's Magazine Issue 100 published an article entitled 'Ennpi Exports Its First Shipment,' in which it explained the company's inputs into several projects including Yanbu Aramco Sinopec Refinery's (YASREF) MTBE project in Saudi Arabia. Ennpi performed the MTBE project as an engineering procurement construction entity. The project was seeking to produce a wider range of gasoline products through introducing the MTBE to the gasoline blend. Its assigned work, as reported by Egypt Oil&Gas in August 2016, included a series of activities from completing preliminary designs and required documentation to issuing purchase orders for the necessary equipment to presenting environmental assessment reports. In addition, the company has been expected to be in charge of finalizing studies on hydraulic boom of pipelines.

Another article entitled 'Petrobel-Deka Subsea Development Project' added that Ennpi was also contracted by Petrobel along with Eni and Tecnomare to perform the engineering services in this new integrated project. Ennpi's tasks were to provide technical assistance and issue technical evaluation reports, review and approve the detailed engineering designs performed by subsea and installation contractors, and follow up and expedite services of other subsea contractors. Furthermore, Ennpi was assigned to supervise and test attendance of all main subsea equipments, provide technical advisory and support Petrobel to ensure the presence of committed specialists at the main engineering assembly and testing sites. During the installation stage, Ennpi was also performing offshore support function along with technical incorporate management and updating the detailed field layout based on implemented engineering activities.

A large scope of involved services in a project development conducted by Ennpi suggests that it is almost inevitable for the oil and gas industry to resort to engineering, project management, and procurement service companies to help them in assessment and other subsequent operations. These companies plan projects, evaluate them, and propose suitable techniques for a successful implementation of any energy project, regardless of the external market behavior.

As Bains and Company's John McCreery, said in a statement, released on Bain & Company website in October 2015, "now is the time we face a longer lower oil price environment for procurement departments to take a most strategic approach and move beyond the tactical."

In these veins, it is worthwhile to conclude that oil and gas companies are able to minimize unjustified expenses and unprofitable projects, if relevant expertise is delivered by engineering and project management service firms. Hence, these service entities seem to have expanded their relevance in the energy market and in turn have been altering the dynamics of the entire industry.

Improving Service Companies' Profitability through Supply Chain Agility

By Gamal Shaban

The global oil and gas industry has been rapidly turning into a highly volatile and complex industry over the last two years. Meanwhile, the different types of players operating within the industry have been often caught competing on supply chain effectiveness to lower their overhead costs, improve their operational efficiency, and sustain their growth and profitability, in the thick of the fluctuating business environment. Oil-field service and equipment (OFSE) companies have been among the companies suffering the most from the international plunge in oil prices, which commenced in mid-2014.

The OFSE companies, which are considered to be the customer's customer as they provide services and equipment for various types of field operators like exploration and production (E&P) companies and engineering procurement and construction (EPC) companies, have been witnessing their business gradually evaporate as such operators – their clients – have been drastically cutting back on their spending amid the global oil and gas price slumps.

Any oil and gas company's business performance in a highly fluctuating market is mainly dependent on the company's supply chain system's capability to cope with changes in volumes, materials handling, domestic and international transportation, and inventory visibility and control. Hence, an oil and gas service company's supply chain logistics can either become the fundamental game-changer that pushes the company to overcome looming risks and gain comparative advantage at times of crises, or the main factor behind making the company experience a precipitous trajectory and witness its business go to vain. This is why supply chain agility should be the main concern for any oil and gas service company that absolutely depends on another party – the client – to generate revenue.

Crude Price Fluctuations' Impact on Service Companies

According to The Economist, one of Saudi Arabia's former oil ministers, Sheikh Ahmed Zaki Yamani, once said: "The Stone Age did not end for lack of stone, and the Oil Age will end long before the world runs out of oil." These words, which were quoted from an interview in 2001, evoked nothing but wishful thinking back then, yet, 16 years later, Yamani's prediction seems to neatly sum up the current unsettled state of the oil and gas sector. The prices of crude have dropped down from $102 per barrel in January 2014 to just below $30 in January 2016. According to Oil Price's latest report, that came out in September 2016, the West Texas Intermediate (WTI) and Brent Crude (Brent) oil prices currently stand at $44.44 and $46.83 per barrel, respectively.

It is a widely known fact that the drop in global crude prices, that began in the middle of 2014 as a consequence of the growing surplus of crude oil in the face of the weakening demand, caused many companies operating within the oil and gas field to witness huge downfall in their financial statements. In an online publication by Bain & Company, one of the world's leading management and consulting firms, partners, Ethan Phillips and Peter Jackson, wrote: "With [crude] prices hovering below $50, North American tight oil drilling has declined significantly and is unlikely to return to 2014 levels for the foreseeable future (if ever), but this will remain an attractive source and will be one of the first to see renewed activity once demand catches back up with supply."

In the same publication, the Houston-based, Ethan Phillips and the London-based, Peter Jackson, added that the OFSE providers have been among the hardest hit in the energy sector: "Their revenues have fallen significantly as exploration and production (E&P) customers have slashed Capex and activity levels and pressured suppliers to cut pricing. In fact, the leading OFSE companies saw a collective 25% drop in revenue from the second quarter of 2014 to the same quarter in 2015." Such decline in revenue came in as both the international oil companies (IOCs) and the national oil companies (NOCs) have been aggressively negotiating for 10 to 30% discounts, over the last two years, from oil-field service providers.

Henceforth, the service companies need to be aware of the importance of adapting a vigorous and flexible supply chain system that can quickly acclimatize to the client's desires regardless of the circumstances that the outer environment is going through.

An Agile SCM Offers Competitive Advantage

One of the mechanisms is to create effective Supply Chain Management (SCM) structures. SCM is defined as the configuration, coordination, and continuous improvement of a company's routine operations in order to provide maximum customer service

at the lowest expense possible.

The oil and gas service companies' business model focuses on providing field development services that cover the entire oilfield life span to contractors at concession areas, who are considered production companies that sell oil based products to end-users. Therefore, since that any service company is merely a customer-based business that targets meeting its clients' requirements, improving the company's supply chain operational efficiency and agility should doubtlessly come at the very forefront, especially during times of tragedy, in order to eliminate vulnerabilities.

The word agility was originally rooted from the Latin term agilitās, the power to move quickly and easily. In SCM, this terminology reflects the capability of a company to respond and become resistant to any external change. According to David M. Gligor's scholarly article, The Role of Supply Chain Agility in Achieving Supply Chain Fit, there are five complementary dimensions that explain the complexity of supply chain agility; alertness, accessibility, decisiveness, swiftness, and flexibility. These dimensions also act as capabilities that need to be adapted by firms that want to "possess the ability to quickly adjust tactics and operations within their supply chains."

Alertness defines the companies' abilities to read and detect changes. This concept includes scanning and monitoring the environment and the data respectively to grasp a better understanding for the market's strengths, weaknesses, opportunities, and threats (SWOT) for supply and demand. Accessibility stresses on the importance of sharing the relevant data across the different hierarchies within the supply chain system for better integration techniques that enables the company to quickly detect and react to market changes. Decisiveness designates the ability to make solid decisions at a fast pace, so that the company would be able to quickly and smoothly change direction in times of crises. Swiftness indicates the ability to execute plans and operations as quickly as possible regardless of the economic upswings or downswings. Flexibility describes the degree to which the company can adapt and implement new tactics and processes. This dimension combines the robustness of the supply chain.

Another essential dimension that can greatly contribute to improving the supply chain system within an oil and gas service company is providing visibility through data forecasting and scenario analysis. In his book A Theoretical and Practical Contribution to Supply Chain Robustness, Christian F. Durach, argues that a forecasting model based on the analysis of current and historical data can enable better predictions. For example, since the oil price acts as a strong indicator for the effectiveness and the activity of the market, a forecast of the oil prices can offer service companies great conspicuousness regarding the volumes that the producers would necessitate to meet their customer's demand. It will thus provide the service company with a better understanding of the services that its client will probably be requiring. Another example would be forecasting the prices of other commodities and raw materials, like steel, that are required for operations. For instance, a forecast of the global steel price can enable a service company to implement cost reductions by allocating the best time to buy the needed raw material from the right supplier.

The multifaceted concept of supply chain agility encompasses various interrelated dimensions that enable oil and gas service companies to get around the high uncertainty levels that are currently present within the international oil and gas sector. Moreover, a company that adapts such capabilities within its supply chain system will have the opportunity to outperform its less agile competitors thus gain competitive advantage within the OFSE sector.

"In fact, the leading OFSE companies saw a collective 25% drop in revenue from the second quarter of 2014 to the same quarter in 2015."

Ethan Phillips and Peter Jackson, Bain & Company

"Their [OFSE companies'] revenues have fallen significantly as exploration and production (E&P) customers have slashed Capex and activity levels and pressured suppliers to cut pricing."

Ethan Phillips and Peter Jackson, Bain & Company

Schlumberger: The Pioneer in SCM

Schlumberger, the world's leading oilfield services company, can be taken as the poster child for having one of the best supply chain systems within the oil and gas sector. Headquartered in three different cities, Houston, Paris, and The Hague, the company has succeeded in supplying numerous large scale projects for different contractors in around 80 countries.

In November 2013, The American Oil and Gas Reporter, a publication that serves the exploration, drilling, and production industry, mentioned that Endeavor Energy Resources LP has depended on Schlumberger's technical expertise and contracted the originally-French service company to drill and complete a problematic oil well located in the Wolfcamp Shale in West Texas. Wolfbone was the local name given to the Delaware basin's vertical wells with comingled production from the Wolfcamp and Bone Spring Intervals. The Wolfbone interval was characterized by highly heterogeneous lithologies and formation properties, thus to ensure the economic success of the Wolfbone interval, Endeavor Energy partnered with the reputable Schlumberger to characterize the reservoir.

According to Schlumberger's case study on the integrated stimulation strategy that the company implemented within its supply chain logistics, as published on the company's website, Schlumberger offered Endeavor Energy "an integrated strategy encompassing detailed reservoir characterization, complex fracture modeling with Mangrove software, and HiWAY channel fracturing technique." This integrated workflow has greatly contributed to optimizing the well completion efficiency and effectiveness and ended up saving Schlumberger's client, Endeavor Energy, up to $734,000 per well. Schlumberger's strategy also increased the well's initial oil production by 60% - in comparison with the offset horizontal wells - as the HiWAY technique used 30% less proppant per stage and conserved 6% less fluid per stage than other conventional stimulation treatments.

Schlumberger's supply chain management had to conduct "a completion and production analysis [on the subject wells], which includes post-treatment fracture simulation, production log analysis, rate transient analysis, and production history matching," the company's website read. These steps aided "the calibration of the petrophysical and anisotropic stress models." Such data forecasting and analyses played a big role in not only saving the client the mentioned amount of money, but also in identifying "high-potential horizontal targets within the Wolfbone play that would be targeted in future horizontal developments."

Schlumberger has thus demonstrated its ability to adopt effective SCM mechanisms that have strengthened its position in a challenging and competitive market that the oil crisis has created. The company's achievements thus strongly suggest that only those OFSEs that will succeed in preserving their margins, allocating their challenges, conducting solid forecasts, coping with uncertainties, and selecting the right strategies, services, and technologies for their clients, will be able to generate the highest profits during this unstable period and come out from this crisis with greater resilience. An agile SCM scheme would enable them to do all of these operations at the right time and at the right cost.

This is why service companies that are struggling in maintaining their business should consider evaluating the existing panel of supply chain systems within the OFSE sector, like Schlumberger did. Furthermore, they should start adapting similar strategies that would help them boost their performance through remodeling the company's inner systems according to the wavering circumstances that the oil and gas industry has been facing.

The Role of Oil Services in the Development of the Egyptian Oil Economy

DINA IBRAHIM, Master in Economics

This brief research study examines the economies of oil in Egypt, in terms of production, consumption, reserve, exports, and imports, as well as the ability to export natural gas in Egypt. It studies different factors impacting the oil economies such as the effect and the role of foreign and Egyptian companies, and the function of oil services in these economies.

The oil construction services are the most significant services, which impact the oil sector in Egypt; these services facilitate the processes of production through the construction of marine platforms and oil refineries, in addition to consumption processes through the construction and expansion of the pipelines, and vertical as well as spherical warehouses. The services further affect the local manufacturing of equipments used in oil processes, as an applied study on the Petroleum Projects & Technical Consultations Co. (Petrojet). It aims to show what the company offers.

The study was conducted to compare between the Commonwealth countries, the UAE, Saudi Arabia, and Libya.

Research Issues

1. The lack of oil services offered to the oil companies due to the huge investments in demand.
2. Weak local investment in the oil services, which is due to (1) foreign companies' control over production; (2) the laws Egypt has put in effect in 1956 which allow it to take part in the exploitation and manufacturing operations, leading it to sign agreements with foreign companies.
3. Some companies are offered these types of oil services by the foreign companies.

Research Objectives

1. Studying the construction services in the oil sector.
2. The importance of the construction services in terms of the implementation of projects and other operations.
3. A focus on Petrojet in terms of its engineering constructions and the local manufacturing.
4. Research Hypotheses
5. Oil services are not in line with the volume of production, consumption, reserve, and exports.
6. There is a shortage in the contribution of the private sector to the oil products sector.
7. Petrojet is an Egyptian company that contributed in high-efficiency oil projects, encouraging the establishment of companies to offer these services.
8. The benefits from these oil services are to achieve a high percentage of revenue.

Research Outcomes

The most significant outcomes of this research lie in the fact that oil is an essential energy source for Egypt and that it will remain to be so. In addition, the oil construction services offered to facilitate the operations of production, refining, and consumption are an impactful factor in the development of operations. This is evidently clear in the contribution of Petrojet company to offering these services, which require an immense capital, the transfer of the foreign experience, and the utilization of the modern technology to be in line with the constant and increasing advancement in this field.

Moreover, it is necessary to encourage the private sector to make a contribution to the oil services. This will benefit the companies through high profitability, which would make an impact on the Egyptian economy through the provision of foreign currencies, various experiences, and modern technology.

Key Recommendations

1. Encouraging the private sector to enter with mega investments in the field.
2. Creating a clear policy and laws that encourage the private sector to enter in this field.
3. Expansion of the oil services performance through Egyptian manpower so that foreign companies do not take control.
4. Paying dues with regard to the use of technology in this field and training the labor force and engineers to work efficiently.
5. Encouraging banks to enter the field of oil construction services funding.

Collapse in the Global Oil Prices Leads to the Ravaging of Oil Services Market

Eng. MOHAMMED ABDEL FATTAH, Oil Expert

The fall in the global oil prices was the main reason behind the hampering of many essential factors inside the Egyptian oil sector. They were the most important reasons for the destruction of the oil services market and the recent decline in demand on the services.

Moreover, the halt in the oil services market negatively affected the oil and natural gas research and exploration operations due to the low price of the crude oil barrel in the global markets, which was also the main factor for the decline in the investments targeted for the Egyptian oil sector, especially following the events of the 25th January Revolution. This, subsequently, caused a delay in paying the debts to the foreign partners, which are currently standing at $3.4 billion, leading to a halt in the production and exploration in the Egyptian concession areas until the debts are paid.

The global prices of oil had a negative impact on the market of oil services due to the high costs of drilling, especially in the marine concession areas. Any Egyptian company would find it hard to spend billions of dollars to extract gas from the Mediterranean.

The price for the extraction of one barrel of crude oil has also come close to the import price, especially that Egypt will not be able to attract foreign investments due to the hampering of the oil services market. The Egyptian General Petroleum Corporation (EGPC) and its affiliated companies are always renting excavators from outside Egypt to drill wells due to the run-down local equipment.

The collapse in the global crude oil barrel prices compared to the past years and with regard to the energy subsidies, which reached only EGP 35 billion in the current budget of the fiscal year 2016-2017, significantly impacted the oil services market. The wells, which were recently announced to be drilled in Egypt, will only be executed through corporate giants that have exorbitant cash that they can risk to invest. The most recent of these was the mega Zohr field whose reserves stand at 30 trillion cubic feet of gas.

The government has to support the local oil service companies to avoid bankruptcy due to the huge decline in the global oil prices, as demand in the oil services market is related to the global oil prices. Officials also have to find rapid solutions in order for the local and national industry not to be destroyed, which will force us to always look for service companies abroad and force companies to look for another oil market far from Egypt in the near future. This should be taken into account especially in relation to the fact that the recent halt in the oil agreements for three years has damaged the oil services market and caused a financial crisis.

Finally, the return of the oil services market to where it was is linked to the implementation of the strategic plan of the Egyptian government to transform Egypt into a regional hub for energy in the Middle East and to be an energy importing country instead of an exporter.

Thriving of the services market positively translates into the capability of attracting foreign investments and intensifying oil and natural gas research and exploration operations in the Egyptian concession areas.

VISION ON THE CHALLENGES OF THE NATIONAL PROJECTS IN EGYPT

Dr. ABDEL MONEIM ABU SHADY, Well/Mud Logging & Cementing Integrated Services Director

It is illogical that Egypt's land area is estimated at 1 million sq km, roughly 238 million acres, while the population is heavily condensed in less than 5% of this land area. In other words, they live in approximately 12 million acres. This situation led the people living in the valley and Delta to leave their homes looking for a livelihood, whether in the capital or abroad.

Thus, the political leadership has adopted a sustainable development plan to strategically expand horizontally on the Egyptian lands to the east and west of the desert, while the reclamation and farming of 1.5 million acres have become two of the most important choices for development nationally, through building new public and urban entities as well as adding agricultural and industrial products to the national income system.

For the safety of the Nubian Sandstone Aquifer System (NSAS) or the Nubian Sandstone reservoir, the following procedures have to be taken into consideration in managing the underground reservoir: calculation of the amount of underground water available for use from the Nubian reservoir, while considering that the approved water count for the irrigation of one acre is roughly 6,000 cubic meters annually, and the irrigation period is 300 days annually.

In the production phase of crude, the level of the underground water must not exceed more than half of the water-saturated width in the underground reservoir during the exploitation phase. Wrongful production is also not allowed so that water salinity does not change, which is currently between 150 ppm in the deep layers and 700 ppm in the less deep layers of the reservoir. This type of water is potable and can be used for all agricultural and industrial purposes.

Most important is how these projects are being managed as a whole and how an innovative management can be established to achieve the aims and sustainable development, through a system of a unified team for all the specializations, so that the system would be developed as a whole.

Innovation can be gradually or rapidly applied in the management of the project, and it can be implemented from the start to the end of the project, while following up on the outcomes one by one.

The most significant element is choosing a leadership that would be able to innovate, make decisions, and build a team of engineers, technicians, and administrators who have the ability to understand the objective of this national project. Wise management for this project must use the necessary time to develop and to rapidly finalize the whole project in the time previously set for it, without compromising efficiency and quality.

A short-term as well as a long-term plan must be set for sustainable development as a general plan for the project, to attract investors and create real job opportunities for the Egyptian youth whose numbers have exceeded 60 million, in order to build a robust economy for modern Egypt.

It is not important to calculate the reserve of the reservoir along the years; what is, however, critical is how the reservoir would be managed, as the joint German, American, and Egyptian studies have all affirmed that reserve lasts for over 100 years when the reservoir is sprawled both horizontally and vertically, and is spanned over four African countries: Egypt, Libya, north of Chad, and Sudan.

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Joint Ventures in the Energy Sector: Structuring JVs for Success in Egypt

By Hugh Fraser, Managing Partner of Andrews Kurth Law Firm MENA Office and Legal Specialist in International Energy Law

The Commercial Rationale for Joint Ventures

The sheer scale of investment needed to bring Egypt's deepwater upstream, downstream oil and gas, and power projects into operation, and the specific needs for foreign investment, casts a sharp focus on the joint venture mechanism for doing business in Egypt. The aggregate level of investment anticipated across these sectors currently exceeds $100 billion and it is hoped that the IMF funding package of $12 billion agreed in August will serve as the catalyst to kick start or accelerate much of the needed investment.

Joint ventures in the energy sector are, by definition, a compromise. The starting point for any business venture is that it should be wholly owned with full direction of strategy, investment, management, and financial rewards. They are set into play because one party cannot perform the business venture under its own steam or, if it could act independently, there are compelling commercial and/or legal reasons to combine resources and share risk. The sheer scale of investment needed is the typical driver for a joint venture in the energy sector and, in the MENA region, local ownership laws, local content procurement rules and policies, and the need for market connectivity all contribute to the lean towards the JV model.

Joint ventures are focused around the respective inputs and roles of the two or more participating parties, which typically revolve around six resources: capital, technology and intellectual property, clients and market connectivity, manpower resources, facilities and specialist equipment. The definition of who provides which of these resources and the management of the combination of the resources will be critical to the success of the venture.

They are differentiated from main contractor/sub-contractor, principal and agent/distributor, manufacturer/licensee, franchisor/franchisee and foreign beneficial owner/local nominee shareholder business relationships usually on account of their higher level of complexity, more integrated combination of resources and deeper risk/reward mechanisms where profits and losses are typically shared on a pro-rated fashion according to mutual ownership of the business. They can take the form of collaboration or co-operation arrangements on an ongoing basis, consortia for specific projects or "evergreen" joint venture companies where a separate legal entity is established.

The Key Commercial and Legal Issues in Joint Ventures

The commercial and legal issues and principles underpinning any joint ventures can be neatly segmented into ten areas:

1. The parties to and the objectives and scope of the venture including as to products/services and territory;
2. The legal structure and ownership of the joint venture, with much depending on whether a joint venture is being established and in that case whether on a 50/50 deadlock basis

or a majority controlled/minority basis;

3. The financing of the business, budgeting, reporting, and controls; and related taxation inputs including liability for customs duties, withholding taxes, corporate taxes and personal taxes/social security;
4. The management and decision-making framework including key corporate governance and business ethics rules and policies; anti-corruption provisions are a major and topical risk management consideration;
5. The roles and inputs of the parties, as set out above, in relation to the six key resources inputs;
6. The financial rewards and returns to the parties: these may be channeled by way of interest on capital, royalties on intellectual property licensed in, rentals of facilities and/or equipment, fees for services for personnel provided and dividends/distributions of profits; the concept of resources being provided at "cost" or otherwise can be a key area of tension;
7. The allocations of risk and management of major risk concerns including warranties, indemnities, and insurance arrangements;
8. The protection of goodwill and the respective investments by means of exclusivity, non-competition and non-solicitation of clients and key personnel commitments and undertakings;
9. The governing law and dispute resolution mechanisms; and
10. The duration and exit arrangements.

A pre-requisite for success is that the parties have agreement and a shared understanding on how these issues are to be addressed.

The Process of Establishing Joint Ventures

The process of establishing a successful joint venture can be considered under the following narrative:

First, there needs to be a clear and realistic market assessment for the venture and a rigorous selection and due diligence process on the prospective partner(s);

Second, Heads of Terms should be negotiated and put into effect to address the "key 10" legal and commercial areas set down above. If there is no consensus in these areas such that Heads of Terms can be agreed and signed off then the parties should not proceed to step three. It is no disgrace to admit "we could not reach consensus" and much time and investment can be lost by pretending otherwise;

Third, the Joint Venture Agreement and any ancillary contracts should be negotiated and finalized; the ancillary contracts may involve Subscription and Loan Agreements, Intellectual Property Licenses, Personnel Employment/Secondment Agreements, Services Agreements, Facilities Leases and Equipment Leases;

Fourth, the regulatory process for the establishment, registration, and licensing of the venture should be progressed including the obtaining and submission of all legalized corporate documentation and applicable investment/business plans;

Fifth, the process of vendor registrations with key clients and target clients should be initiated and completed; and

Sixth, all construction, installation, and commission steps should be implanted to bring the venture to state of operational readiness.

It therefore should be no surprise that it can take 12-24 months to have a joint venture move from conception to commencement and a realistic planning/implementation plan and critical path assessment is needed. Steps (after step 2) can and should be taken in parallel where possible, but, unfortunately, in most case, the various steps have to be taken sequentially.

Why Joint Ventures Fail or Succeed?

There is no magic formula for the failure or success of a joint venture but some of the consistent reasons why they fail can be recognized from past experience and analysis:

1. There was insufficient market assessment undertaken and/or the reaction of competitors was under-estimated;
2. The parties were ill-suited as business partners (which in many cases should have been recognized by proper due diligence) and/or one or more of the parties failed to properly perform/provide their role and inputs;
3. There was no consensus on the key legal and commercial arrangements (which should be avoided by the Heads of Terms/JV Agreements process if properly conducted);
4. There was lack of understanding of the establishment process and the timelines and costs involved, with lack of consideration given as to what interim commercial arrangements could have been instituted in parallel;
5. There were deficiencies in the budgeting/projections process with one or more parties under-estimating the funding requirements of the business until positive cashflow could be achieved, often resulting in cash calls being missed and defaults arising;
6. The management team was inexperienced, not fit for purpose or otherwise ill-chosen, and/or the decision-making processes were too bureaucratic or too loose and inconsistent with sound corporate governance and risk management;
7. There were failures in progressing timeously vendor registration formalities with clients;
8. There were deficiencies in the deadlock and dispute resolution process when commercial "crunch points" come to pass or legal problems arose relating to breach of contract by one of more parties (especially as to the protection of goodwill and investment provisions or the warranties that they were no prior or subsequent competing ventures or conflicts of interest);
9. There was a lack of good faith by one of the partners who sought to acquire control or total ownership of the venture by stealth and attrition; and
10. There was a failure to plan and implement a business-like exit arrangement in the event that the venture failed as a commercial concern or the relationship became unworkable.

The flip side of the coin has tended to be that, where these above issues are successfully addressed, the venture will have reasonable odds in favor of success.

In Conclusion

In conclusion, it can be seen the joint ventures are anticipated to play a key role in the progression of Egypt's energy projects. There is skilled art involved in planning and implementing joint ventures if their chances of success are to be maximized. The main considerations are: the commercial rationale for the joint venture; the key legal and commercial terms; the process for the establishment of the joint venture; and the identification of the key ingredients for success and avoidance of failure. An honest, realistic and business-like approach to these areas is essential.

Hugh Fraser is Office Managing Partner of the Middle East office of the Andrews Kurth Law Firm -https://www.andrewskurth.com/people-HughFraser.html. He specializes in energy transactions in the Middle East. Andrews Kurth collaborates with Open Chance Law Firm in relation to its Egypt energy practice.

EGYPS – Opening the Gateway to Egypt and North Africa's New Oil and Gas Opportunities

EGYPS, 14-16 February 2017, CICEC, Cairo – the inaugural Egypt Petroleum Show – opens next February in a market embracing change and welcoming vast new energy reserves.

EGYPS
EGYPT PETROLEUM SHOW
14 - 16 February 2017

Egypt's oil and gas market is experiencing major changes in new project development and consumption patterns amid shifting global dynamics, and interest in the North African nation is growing globally.

Current infrastructure project investments for the receiving, transfer, and trading of petroleum products in Egypt stand at EGP 8.8 billion. Egypt has a growing population and an industrial base hungry for energy. Analysts suggest Egypt is looking to invest more than $14.5 billion into its downstream refining and petrochemical sector in the next five years.

The 2015 discovery of the supergiant offshore natural gas field, Zohr was a game-changing event; changing the face of Egypt's energy industry forever, and bringing greater security of supply.

Early analysis of the field puts total gas in place at around 850 billion cubic meters (30 trillion cubic feet). If validated, Zohr will almost double Egypt's gas reserves, making it self-sufficient in gas, and helping to stabilize its economy thanks to exports.

Mid-September 2016 saw the successful completion of the drilling of the fifth well at the field, with Italian field developer ENI underlining plans to open a sixth well by year end, ensuring the accelerated start-up production rate of 1 bcf per day.

Production is expected to begin in Q4, 2017, with ENI already disclosing plans to link four wells to Egypt's national grid in 2018.

RIGHT TIME

EGYPS 2017 is the first and only oil and gas event of its kind taking place under the patronage of His Excellency President Abdel Fattah El Sisi, President of the Arab Republic of Egypt.

There has never been a better time to launch an oil and gas event in the North African country, according to senior Egyptian officials.

Engineer Tarek El Molla, Minister of Petroleum & Mineral Resources, believes EGYPS will provide a vital forum for exchange between parties involved in the oil and gas industry in Egypt and other countries.

"The Egyptian petroleum sector will deliver a worthwhile conference through demonstrating available investment opportunities in the refining and marketing sectors, in addition to revealing promising research and exploration areas of deep Egyptian waters and new geological layers," the Minister said.

The event is fully supported by the Ministry of Petroleum & Mineral Resources and His Excellency Tarek El Molla is Chairman of the event. EGYPS is also fully supported by the country's NOCs including EGAS, EGPC, Ganope, and ECHEM.

The Egypt Petroleum Show is co-organized between dmg events and ACG-ITF, one of the leading exhibition companies in Egypt.

OUTSTANDING RESPONSE

Billed as 'The gateway to Egypt's new oil and gas opportunities,' the three-day event is host to an exhibition alongside a series of technical and strategic conference sessions and a dedicated conference for women in the sector.

There is a great deal of industry interest and excitement for EGYPS, spread across three halls with more than 80 leading global oil and gas players having confirmed participation. Those exhibitors attending include Egyptian & Middle Eastern NOCs such as EGAS, EGPC, Ganope, ECHEM, BAPCO, BANAGAS as well as Government entities including MIDOR, NOGA Holdings, GPIC; IOCs such as ENI, BP, ExxonMobil, Apache and EDISON; and service providers including Schlumberger, Halliburton, Baker Hughes, Weatherford, AVEVA Solutions, DNV GL & AkzoNobel.

There is local participation from ENPPI, PETROJET, Petroleum Marine Services Company (PMS), EPHH Rig Manufacturing Company, Ruhrpumpen Egypt, SHOTEC, Maridive Group, and the AyadsonsGroup.

The event has received a tremendous response across Africa, Europe, and the Middle East, and includes innovative features such as the Petroleum Club, a private business meeting and networking zone exclusively for C-level industry players, and a Student Program for young industry graduates, helping shape their future in the energy sector.

EGYPS has also attracted international participation, with companies attending from South Korea, the US, the UAE, Italy, Norway, Spain, and Germany, to name a few, as well as country pavilions including the United Kingdom, Italy, China, the UAE, India, Bahrain, and South Korea.

Underlining the importance foreign companies are placing on this new event, international brands such as ExxonMobil, BP, Schlumberger, and Halliburton have confirmed their sponsorship for the event as diamond, platinum, gold, and silver sponsors, respectively.

CONFERENCE

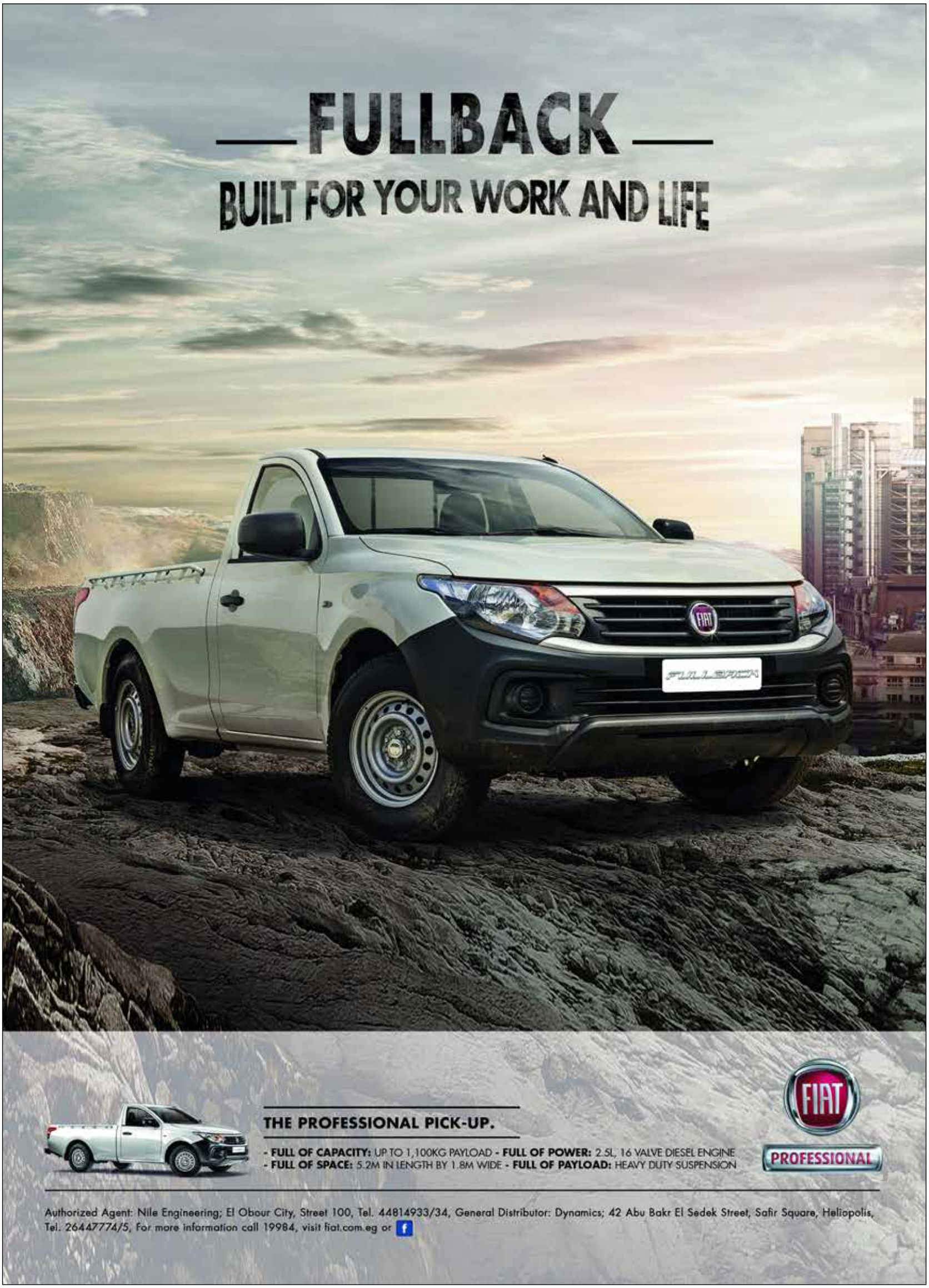
The conference includes 28 technical conference sessions across the event's three days, covering ten technical categories (upstream, midstream, and downstream) including E&P geoscience; oil, gas, and unconventional field developments; offshore technology, project management, gas processing technology, refining and petrochemicals.

As a conference delegate, you can expect to hear from more than 100 industry experts, speaking at nine sessions per day, with four speakers per session. Papers and speakers have been selected by a technical committee made up of 63 industry experts from more than 26 companies. Abstracts were submitted from more than 40 countries.

Alongside the Technical sessions EGYPS will also host Strategic and the Women In Energy conference sessions.

For information on EGYPS visit www.egyptpetroleumshow.com or email egyps.sales@dmgeventsme.com

To register for the conference, visit: www.egyps.com/conferenceregistration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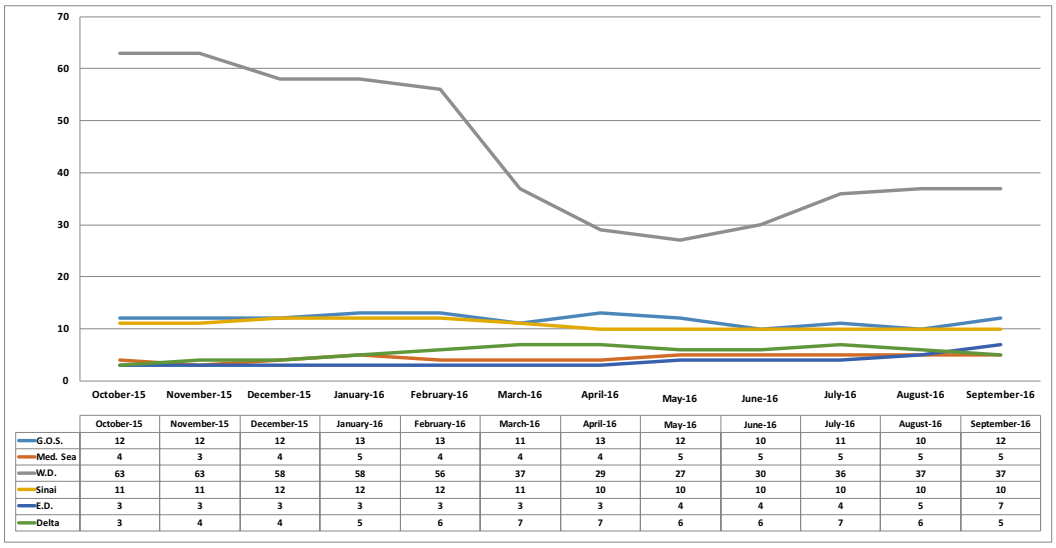
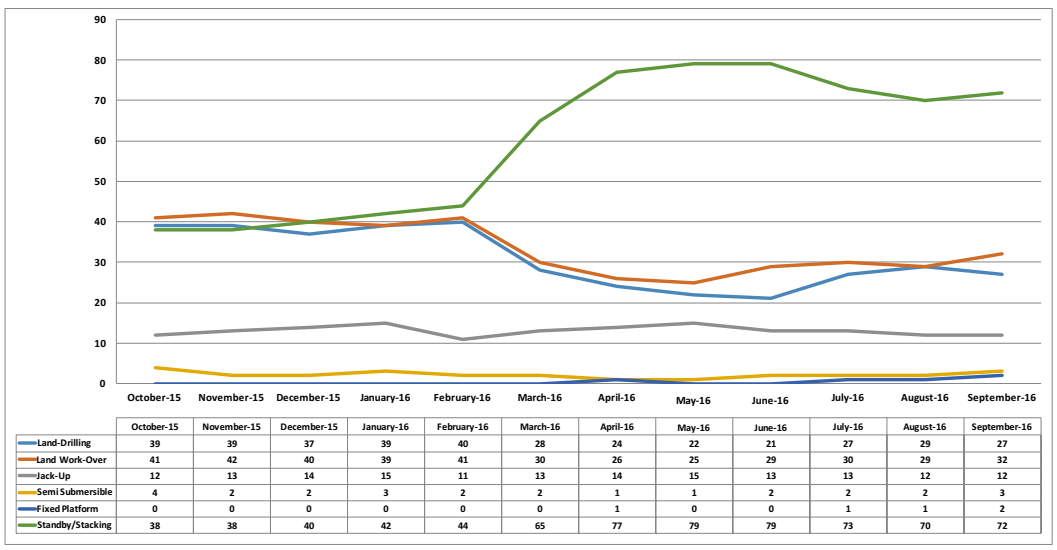
Changes in Rigs by Area- October 2015 to September 2016



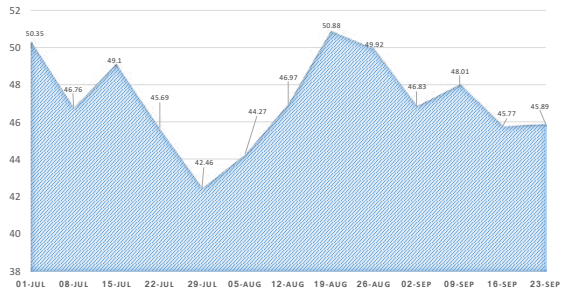
	October-15	November-15	December-15	January-16	February-16	March-16	April-16	May-16	June-16	July-16	August-16	September-16
G.O.S.	12	12	12	13	13	11	13	12	10	11	10	12
Med. Sea	4	3	4	5	4	4	4	5	5	5	5	5
W.D.	63	63	58	58	56	37	29	27	30	36	37	37
Sinai	11	11	12	12	12	11	10	10	10	10	10	10
E.D.	3	3	3	3	3	3	3	4	4	4	5	7
Delta	3	4	4	5	6	7	7	6	6	7	6	5

Changes in Rigs by Type - October 2015 to September 2016

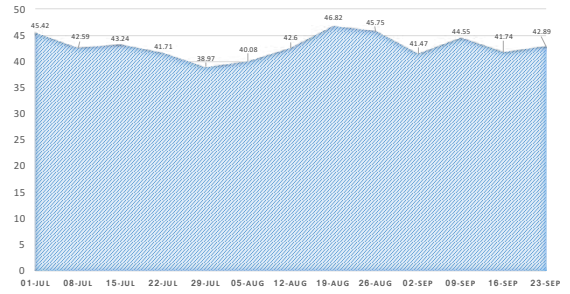


	October-15	November-15	December-15	January-16	February-16	March-16	April-16	May-16	June-16	July-16	August-16	September-16
Land-Drilling	39	39	37	39	40	28	24	22	21	27	29	27
Land Work-Over	41	42	40	39	41	30	26	25	29	30	29	32
Jack-Up	12	13	14	15	11	13	14	15	13	13	12	12
Semi Submersible	4	2	2	3	2	2	1	1	2	2	2	3
Fixed Platform	0	0	0	0	0	0	1	0	0	1	1	2
Standby/Stacking	38	38	40	42	44	65	77	79	79	73	70	72

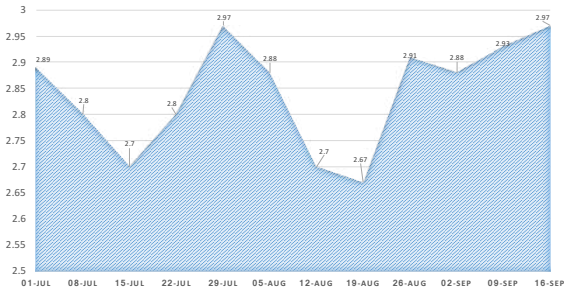
BRENT PRICES



OPEC BASKET PRICES



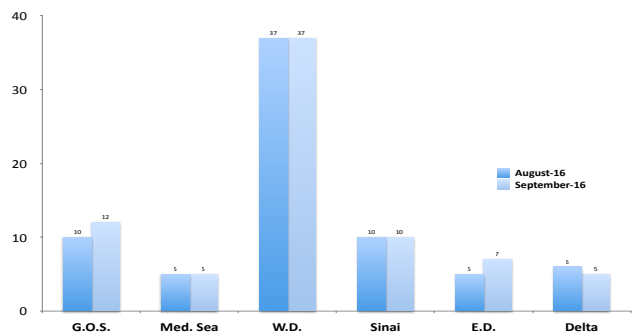
NATURAL GAS PRICES



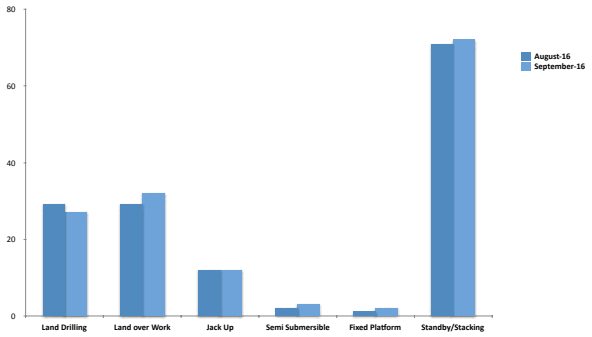
Production - August 2016

	Crude Oil	Equivalent Gas	Liquified Gas	Condensate
Med. Sea	-	9741429	182836	621044
E.D.	1907841	13750	3138	1075
W.D.	9766012	7653036	675689	1480625
GOS	4130771	614107	250537	70447
Delta	27098	4293036	133999	312495
Sinai	1829259	536	39591	24954
Total	17660981	22315894	1285790	2510640

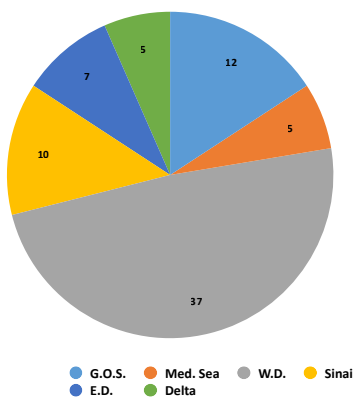
Rigs per Area - August - September 2016



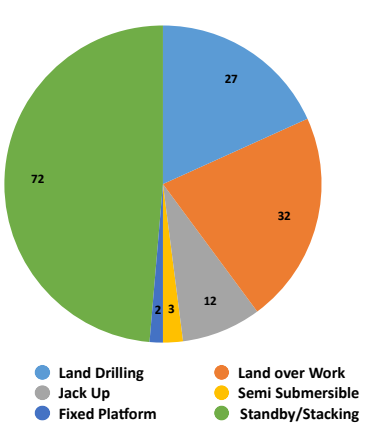
Rigs per Specification - August - September 2016



Rig Count per Area - September 2016



Rigs per Specification - September 2016



Unit: Barrel

Rigs per Specification August - September 2016

Location	August-16	September-16
Land Drilling	29	27
Land over Work	29	32
Jack Up	12	12
Semi Submersible	2	3
Fixed Platform	1	2
Standby/Stacking	71	72
Drillship		
Total	144	148

Rigs per Area August - September 2016

Location	August-16	September-16
G.O.S.	10	12
Med. Sea	5	5
W.D.	37	37
Sinai	10	10
E.D.	5	7
Delta	6	5
Total	73	76

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